Economic and Social Environment

Introduction

The Tongass National Forest stretches roughly 500 miles northwest from Ketchikan to Yakutat and includes approximately 80 percent of the land area in Southeast Alaska. The region is sparsely settled with an estimated 74,280 people living in more than 30 towns and villages located in and around the Forest in 2014 (Alaska Department of Labor [DOL] 2014d). The communities of Southeast Alaska depend on the Tongass National Forest in various ways, including employment in the wood products, commercial fishing and fish processing, recreation, tourism, and mining and mineral development sectors. Many residents depend heavily on subsistence hunting and fishing to meet their basic needs. In addition, natural amenities and recreation activities associated with the Tongass National Forest form an important part of the quality of life for many residents of Southeast Alaska. Since there is very little private land in the region to provide these resources and opportunities, appropriate management of the Tongass National Forest is extremely important to local communities and the overall regional economy.

The Tongass National Forest is also an important national and international resource. An estimated 1,037,000 people visited Southeast Alaska in 2011, with cruise ship passengers accounting for 85 percent of this total (McDowell Group 2012a). For many, a visit to the Tongass is a once-in-a-lifetime experience and spending by these visitors helps drive the recreation and tourism sector. The Tongass National Forest contains large areas of essentially undisturbed forest lands, which represent increasingly scarce and, therefore, increasingly valuable ecosystems. These lands have value for many people who may never visit Southeast Alaska, but benefit from knowing that the Tongass National Forest is there. This type of value, often referred to as non-use value, includes existence, option, and bequest values. These values represent the value that individuals obtain from knowing that the Forest exists, knowing that it would be available to visit in the future should they choose to do so, and knowing that it will be left for future generations to inherit.

The economic and social assessment prepared for this EIS is divided into two main parts: 1) Regional and National Economy, and 2) Subregional Overview and Communities. The first part, Regional and National Economy, evaluates the potential regional and national economic effects of the proposed plan alternatives. The second part, Subregional Overview and Communities, assesses impacts to the economic and social environment at the subregional and community level.

Regional and National Economy

Affected Environment

Southeast Alaska is divided into eight boroughs and two census areas (CAs). The eight boroughs – Haines, Juneau, Ketchikan Gateway, Petersburg, Sitka, Municipality of Skagway, Wrangell, and Yakutat – correspond with the county governments found elsewhere in the United States. The remaining areas that are not part of a borough are allocated to two CAs: the Hoonah-Angoon and Prince of Wales-Hyder CAs. CAs are only statistical units, but are widely recognized from a data reporting standpoint by federal agencies and most state agencies as county equivalents. Boroughs and CAs are collectively referred to as “boroughs” in the remainder of this section.

More than 74,000 people lived in the towns, communities, and villages of Alaska’s southeastern panhandle in 2014, most of which are located on islands or along the narrow coastal strip (Alaska DOL 2014d). Only four of Southeast Alaska’s 34 communities met the U.S. Census Bureau’s 2010 definition of an urban cluster (population greater than 2,500) in 2014 (Juneau, Sitka, Ketchikan, and Petersburg). Juneau, which is the state capital and a regional trade center, accounted for 45 percent of Southeast Alaska’s total population in 2013 (Alaska DOL 2014d). Ketchikan Gateway Borough, the second largest borough in Southeast Alaska, accounted for about 19 percent of the region’s population in 2013. Ketchikan is a smaller regional trade center that serves Prince of Wales Island and the surrounding area. Population is discussed in more detail in the *Subregional Overview and Communities* section of this EIS.

The remote nature of the region is reflected in a population density of approximately two persons per square mile, which is much lower than the United States’ average of 88.9 persons per square mile. Population densities by borough/census area in 2013 ranged from 0.1 in the City and Borough of Yakutat to 12.2 in the City and Borough of Juneau (Alaska DOL 2014e; U.S. Census Bureau 2014a). Many locations are accessible only by boat or plane, and landing strips or seaplane facilities are located in virtually all communities. The Alaska State ferry system transports people and vehicles between several ports in Southeast Alaska, and Prince Rupert, British Columbia, and Bellingham, Washington. Haines and Skagway, at the northern end of the Forest, and Hyder at the southern end, offer access to interior and Southcentral Alaska via the Alaska Highway, and Canada via the Cassiar Highway.

The following sections provide an overview of the social and economic conditions in Southeast Alaska and provide a baseline against which the potential effects of the proposed alternatives are measured.

Regional Economic Overview

Employment in Southeast Alaska increased by approximately 7 percent between 2000 and 2012, which translates into an annual growth rate of 0.5 percent (Table 3.22-1). This annual growth rate was less than half of the state average over this period (0.5 percent versus 1.2 percent), but more broadly comparable to the national average (0.6 percent). Data compiled by the Alaska DOL indicate that employment in Southeast Alaska has fluctuated over the last decade with a year of job growth often followed by a year of net job loss (Alaska DOL 2015b). The largest drop in annual employment occurred between 2008 and 2009, with a net decrease of 750 jobs, approximately 2 percent of total regional employment.

Adjusted for inflation, total personal income in Southeast Alaska increased by about 17 percent between 2000 and 2012, an annual growth rate of approximately 1.2 percent. This annual growth rate was less than half of the state average over this period (1.2 percent versus 2.5 percent), and more generally comparable to the national average (1.4 percent) (Table 3.22-1). Per capita income in Southeast Alaska was 16 percent higher in 2012 than 2000, increasing at a slightly slower annual rate than Alaska as a whole (1.2 percent versus 1.3 percent), about twice as fast as the national increase of 0.6 percent over this same period (Table 3.22-1). Average earnings per job in Southeast Alaska, adjusted for inflation, were 7 percent higher in 2012 than 2000, an increase of 0.5 percent per year, compared to state and U.S. annual growth rates of 0.8 percent and 0.5 percent over the same time period (Table 3.22-1).

Table 3.22-1
Southeast Alaska Economic Overview

Economic Indicator	SE AK 2000	SE AK 2012	2000 to 2012 SE AK Percent Change	2000 to 2012 SE AK Growth Rate (%)	2000 to 2012 Alaska Growth Rate (%)	2000 to 2012 U.S. Growth Rate (%)
Total Personal Income (Million 2014 dollars)	3,452	4,054	17%	1.2	2.5	1.4
Population	72,937	73,687	1%	0.1	1.2	0.8
Average Annual Employment	50,276	53,833	7%	0.5	1.2	0.6
Per Capita Personal Income (2014 dollars)	47,325	55,016	16%	1.2	1.3	0.6
As percent of Alaska Average	109%	107%	-	-	-	-
As percent of U.S. Average	112%	120%	-	-	-	-
Average Earnings per Job (2014 dollars/year)	45,820	49,050	7%	0.5	0.8	0.5
As percent of Alaska Average	92%	88%	-	-	-	-
As percent of U.S. Average	95%	95%	-	-	-	-
Non-Job Related Earnings Per Capita (2014 dollars)	15,682	18,819	20%	1.4	0.9	1.4
As percent of Total Per Capita Income	33%	34%	-	-	-	-
SE Alaska Unemployment Rate	6.2	6.8	-	-	-	-
Alaska Unemployment Rate	6.2	6.9	-	-	-	-
U.S. Unemployment Rate	4.0	8.1	-	-	-	-

Notes:
SE AK = Southeast Alaska
[1] Income and earnings figures for 2000 and 2012 are adjusted for inflation and presented as the amount they would be worth in 2014.
[2] Full- and part-time employment includes self-employed workers. Employment data are by place of work, not place of residence, and therefore include people who work in Southeast Alaska but do not live there. The nonresident and nonlocal Alaska resident shares of total employment in Southeast Alaska in 2012 were estimated to be 24 percent and 12 percent, respectively (Kreiger et al. 2014). Employment is measured as the average annual number of jobs, full-time plus part-time, with each job that a person holds counted at full weight.

Source: Alaska DOL 2014e; U.S. Bureau of Economic Analysis 2014a, 2014b; U.S. Bureau of Labor Statistics 2014

Per capita income in Southeast Alaska was higher than both the statewide and national averages in 2012. Average earnings per job were lower in Southeast Alaska in 2012, equivalent to about 88 percent and 95 percent of the Alaska and national averages, respectively (Table 3.22-1). The region's unemployment rate (6.8 percent) was lower than the state (6.9 percent) and national (8.1 percent) averages in 2012 (Table 3.22-1). The unemployment rate in Southeast Alaska remained below the state and national averages in 2013, 6.4 percent versus 6.5 percent and 7.4 percent, respectively (Alaska DOL 2014f; U.S. Bureau of Labor Statistics 2014).

Southeast Alaska employment is summarized by sector in Table 3.22-2. State and local government, consumer services, and retail trade were the largest employers in 2001 and 2013. Total employment increased by 5,081 jobs or 11 percent between 2001 and 2013, with self-employed workers (proprietors) accounting for 71 percent of this increase. Large absolute growth occurred in the social services sector, primarily in health care and social assistance, with the largest relative increase occurring in the mining sector, with an 11-fold increase from 50 jobs in 2001 to 649 jobs in 2013. Mining and other natural resource-based industries are discussed in more detail below.

Table 3.22-2
Southeast Alaska Employment by Sector, 2001 and 2013

Economic Sector	Number of Jobs 2001	Number of Jobs 2013	Share of Total (percent) 2001	Share of Total (percent) 2013	Percent Change 2001 to 2013	2013 Location Quotient[4]
Total full-time and part-time employment[1]	**48,064**	**53,145**	**100**	**100**	**11**	**1.0**
Type of Employment						
Wage and salary employment	37,256	38,743	77.5	72.9	4	0.9
Proprietors employment	10,808	14,402	22.5	27.1	33	1.3
Wage and Salary Employment by Industry[2]						
Farming	70	59	0.1	0.1	-16	0.6
Forestry, fishing, related activities, and other	591	1,108	1.2	2.1	87	0.9
Mining	50	649	0.1	1.2	1198	0.3
Construction	2,465	2,660	5.1	5.0	8	0.9
Manufacturing	1,621	2,034	3.4	3.8	25	1.1
Wholesale trade	59	86	0.1	0.2	46	0.1
Retail trade	5,374	5,281	11.2	9.9	-2	1.0
Transportation and warehousing	2,699	2,524	5.6	4.7	-6	0.9
Finance and insurance	846	1,243	1.8	2.3	47	0.9
Real estate and rental and leasing	1,011	1,458	2.1	2.7	44	0.8
Services (Consumer)[3]	6,956	7,035	14.5	13.2	1	0.9
Services (Producer)[3]	2,092	3,124	4.4	5.9	49	0.5
Services (Social)[3]	3,316	4,721	6.9	8.9	42	0.7
Federal government	2,817	2,699	5.9	5.1	-4	0.5
State and local government	11,078	11,248	23.0	21.2	2	1.5

[1] See Table 3.22-1, note 2.
[2] These data were initially compiled at the borough level and combined here to form a regional overview. Employment counts are not provided for sectors with less than 10 jobs or for sectors where counts would disclose confidential information and employment counts were not provided for all sectors. These numbers are, however, included in the totals. As a result, employment by industry estimates do not sum to the total full- and part-time employment estimates, and the corresponding percentages do not sum to 100.
[3] Nine 2-digit North American Industry Classification System (NAICS) categories are combined into these three divisions for ease of presentation. Consumer service includes: other services; arts, entertainment, and recreation; and accommodation and food services. Producer services includes: information; professional and technical services; management of companies and enterprises; and administrative and waste services. Social services includes: educational services; and health care and social assistance.
[4] The location quotient is a relative measure of industry specialization that compares the percentage of employment concentrated in each sector in the study region with a benchmark region, in this case the State of Alaska. A location quotient of 1.0 indicates that the study region has the same percentage of employment in this sector as the benchmark region does. Location quotients above or below 1.0 indicate that the study region is over or under represented in this sector, respectively.
Source: U.S. Bureau of Economic Analysis 2014c.

The location quotients in Table 3.22-2 (see note 4) compare the regional employment distribution with the state average and indicate Southeast Alaska's economy is relatively specialized in the state and local government sector. The relative concentration in the government sector largely reflects the location of the state capital in Juneau, but the relatively high proportion of government employment in the other Southeast Alaska communities also plays a part. With the exception of manufacturing and retail trade, which have respective location quotients of 1.1 and 1.0, all other sectors in Southeast Alaska are relatively underrepresented.

The government sector is the main source of year round employment in all the communities in Southeast Alaska. In addition to direct employment in the government sector, many of the area's private sector jobs are also dependent on government funding and contracts. Private sector activities dependent on government funding include road construction and health services, with the region's largest private employer, Southeast Alaska Regional Health Corporation, relying heavily on government funding (Gilbertson 2004).

Recreation and tourism is an important part of the economy of Southeast Alaska. This is not readily apparent from Table 3.22-2 because recreation and tourism is not classified or measured as a standard industrial category and employment and income data are not specifically collected for this sector. Components of recreation and tourism activities are instead partially captured in other industrial sectors, mainly retail trade and consumer services. The share of the total workforce that is self-employed in Southeast Alaska is higher than the state average, 27 percent compared to 21 percent (location quotient of 1.3), and higher than the national average of 22 percent. Much of this self-employment is associated with the retail trade and consumer services sectors and is sensitive to recreation and tourism activity. Commercial fishing also accounts for a large share of self-employment in Southeast Alaska.

The following section discusses the relative contribution of natural resource-based industries to the regional economy.

Natural Resource-Based Industries

Direct Employment

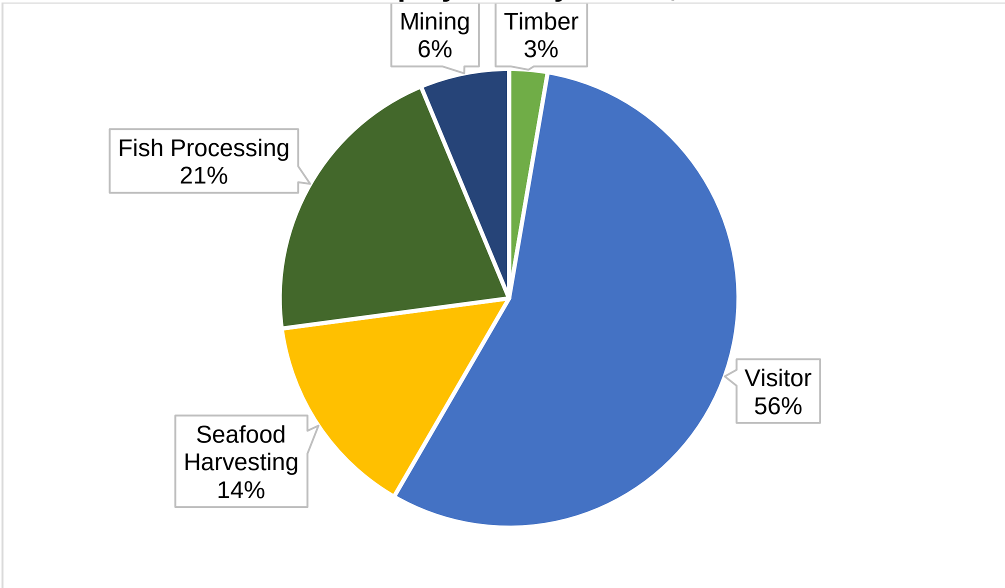
Direct employment in natural resource-based industries accounted for slightly more than one-quarter (26 percent) of total employment in Southeast Alaska in 2013 (Table 3.22-3). The estimated distribution of resource-dependent employment is shown by industry in Figure 3.22-1. The visitor industry (which is used to approximate the recreation and tourism sector) accounted for more than half (56 percent) of this total, followed by the fish processing and seafood harvesting sectors, which accounted for 21 percent and 15 percent of total resource-based employment, respectively (Table 3.22-3). Mining accounted for 6 percent and wood products made up 3 percent.

Table 3.22-3
Natural Resource-Based Employment by Sector, 2013

Industry	Direct Employment	Percent of Regional Total	Percent of Resource-Based Total
Timber	325	1%	3%
Visitor	6,707	15%	56%
Seafood Harvesting	1,750	4%	15%
Fish Processing	2,510	5%	21%
Mining	756	2%	6%
Total Resource-Based	**12,048**	**26%**	**100%**
Southeast Alaska Total	46,011	100%	na

Notes:
[1] These data were compiled on behalf of Southeast Conference based on data collected by the Alaska DOL and the U.S. Census Bureau. The Alaska DOL data are for 2013 for non-agricultural wage and salary employment. These data do not include proprietors or self-employed workers, and are, therefore, supplemented using data from the 2012 US Census Nonemployer Statistics, which specifically count proprietors and the self-employed. These numbers are collected in different ways and do not exactly match those compiled by the U.S. Bureau of Economic Analysis (Tables 3.22-1 and 3.22-2).
Source: Southeast Conference 2014

Figure 3.22-1
Natural Resource-Based Employment by Sector, 2013



Notes:
Total = 12,048 Employees
Source: See Table 3.22-3.

Nonresident and Seasonal Employment

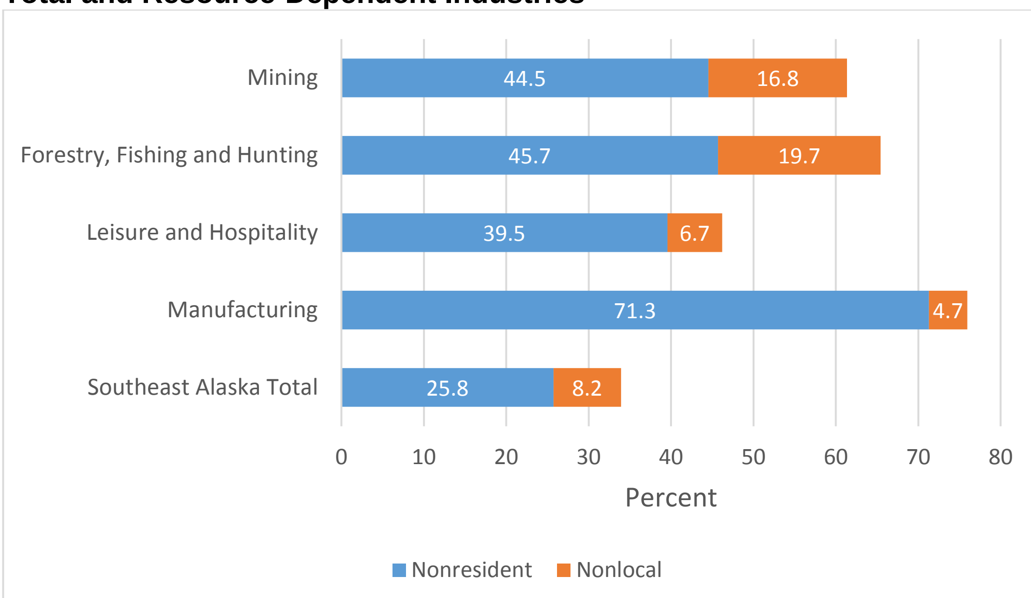
Nonresident and seasonal employment are two important and related aspects of resource-dependent employment in Southeast Alaska. Many nonresidents work a relatively short time in Alaska, often for just two or three months, generally spend the bulk of their earnings elsewhere, and, as a result, contribute less to the regional economy than resident workers.

Data compiled by the Alaska DOL indicate that nonresidents account for a relatively large share of resource-dependent employment in Southeast Alaska. These data are based on Alaska unemployment insurance records and Alaska Permanent Fund Dividend data and do not include federal employees or the self-employed. Estimates are worker counts not employment estimates. Worker counts identify the cumulative number of people working in an occupation over the course of a year; employment estimates identify the number of filled jobs. Worker counts are usually higher than annual job counts because a single position can be filled by more than one person over the course of a year and workers in seasonal industries are often employed for less than a year (Kreiger et al. 2015).

Nonresidents accounted for approximately 25.8 percent of employment in Southeast Alaska in 2013, compared to 20.6 percent for the state as a whole, with an additional 8.2 percent of non-local workers in Southeast who normally reside elsewhere in Alaska (Kreiger et al. 2015; Alaska DOL 2015c). Within Southeast Alaska, the nonresident share of employment ranged from 24.5 percent in Juneau to 68.7 percent in Skagway. The relatively low level of nonresident employment in Juneau reflects the importance of the government sector, which accounted for 35 percent of employment in Juneau in 2013 (U.S. Bureau of Economic Analysis 2014c).

Viewed by resource-dependent sector, nonresident and nonlocal employment combined ranged from 46 percent for the leisure and hospitality sector (used here to represent recreation and tourism) to 76 percent for the manufacturing sector compared to 34 percent region wide (Figure 3.22-2). Nonresident employment is high in the manufacturing sector because 80 percent of manufacturing employment in Southeast Alaska in 2013 was in the seafood processing sector. Seafood processing had the highest percentage of nonresident workers in Alaska in 2013, with almost three-quarters of the labor force (74.2 percent) comprising nonresidents (Krieger et al. 2015). Nonresidents accounted for approximately 67 percent of employment in the fish processing sector in Southeast Alaska in 2012, ranging from 35.7 percent of fish processing workers in Skagway to 90.3 percent in Haines Borough (Alaska DOL 2014f; Table 3.22-12).

Figure 3.22-2
2013 Nonresident Share of Direct Employment in Southeast Alaska. Total and Resource-Dependent Industries

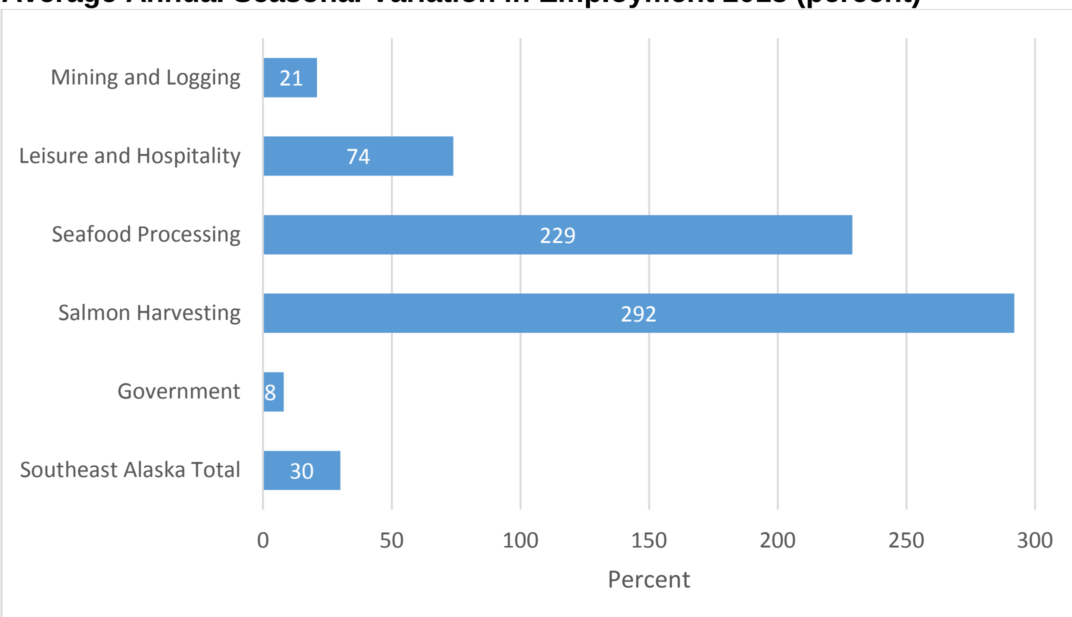


Notes:
1/ The forestry, fishing and hunting sector also includes agriculture, which employs very few people in Southeast Alaska.
2/ Leisure and hospitality consists of two sectors: Arts, Entertainment and Recreation, and Accommodation and Food Services. These sectors are used here to represent the recreation and tourism sector.
3/ Seafood processing accounted for 80 percent of employment in the manufacturing sector in 2013.
Source: Alaska DOL 2015c

Most salmon and other fish harvesters are self-employed and exempt from reporting employment and wages. As a result, information on the nonresident share of total employment in this sector in Southeast Alaska is not available. However, statewide, Alaska DOL estimates that nonresidents made up an estimated 51.3 percent of the fisheries harvest workforce in 2013 (Krieger et al. 2015).

Southeast Alaska's economy is highly seasonal. Average annual seasonal variations in employment are shown for the mining and logging, leisure and hospitality, seafood processing, salmon harvesting, and government sectors, and the region as a whole in Figure 3.22-3.[1] As shown in this figure, seasonal variations in resource-based employment—the difference between peak levels of employment in the summer and dips in the winter—are often quite pronounced. The measure shown in the figure is calculated by dividing the difference between summer maximum and winter minimum employment by annual average employment. Expressed as a percentage, this figure allows comparison between different industries and the regional economy as a whole. Salmon harvesting and seafood processing in particular show very high degrees of seasonal variation. Data presented for the Leisure and Hospitality sector in Figure 3.22-3 (as a proxy for recreation and tourism) show a degree of variation substantially lower than the salmon harvesting and seafood processing sectors, but more than twice the Southeast Alaska average. Annual seasonal variation for mining and logging was lower than the Southeast Alaska average. Data are also presented for the government sector, which showed much less seasonal variation than the Southeast Alaska average (Figure 3.22-3).

Figure 3.22-3
Average Annual Seasonal Variation in Employment 2013 (percent)



Notes:
1/ Average seasonal variation is calculated here by dividing the difference between summer maximum and winter minimum employment by annual average employment. The resulting measure is expressed as a percentage.
2/ Data for the Leisure and Hospitality sector are used here to represent recreation and tourism.
3/ Data for salmon harvesting are for 2012.
Source: Alaska DOL 2015b

Industry-Specific Descriptions

The following subsections contain more detailed descriptions of the following resource-dependent industries: wood products, recreation and tourism, commercial fishing and seafood processing, and mining and mineral development.

[1] Management decisions have the potential to affect salmon and, therefore, data are presented for the salmon fishery. Data available for the seafood processing industry do not allow for an easy distinction between salmon processors and other firms, and, therefore, data presented for the seafood processing sector include the entire seafood processing industry.

Wood Products

Employment

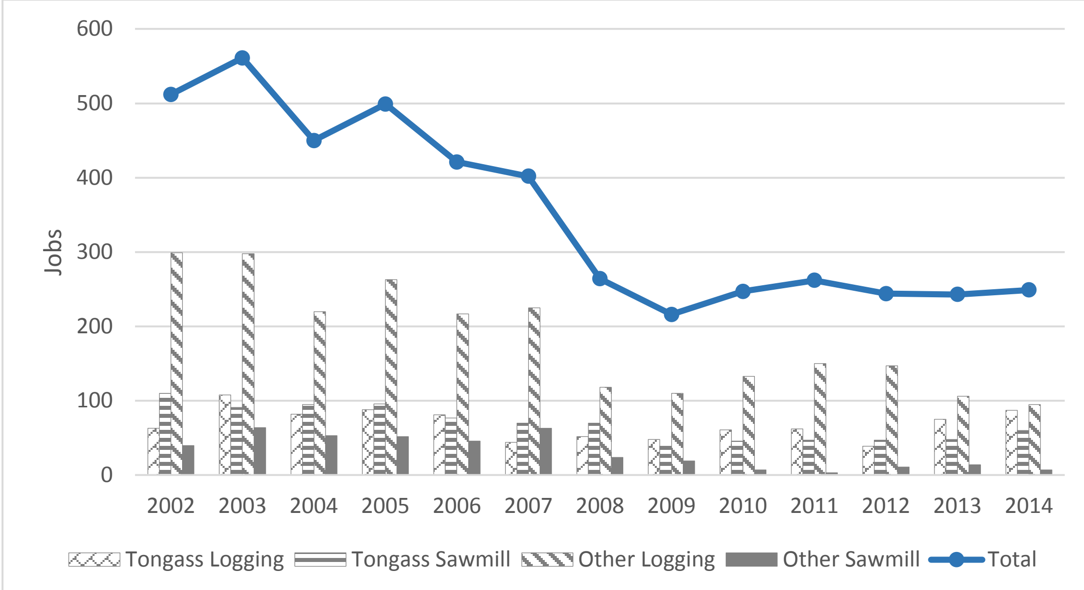
Timber employment in Southeast Alaska peaked at the end of the 1980s, with slightly more than 3,500 jobs in 1989 and 1990, before dropping sharply in the 1990s. Much of this job loss was associated with closure of the large pulp mills in Sitka (1993) and Ketchikan (1997), which together accounted for 899 jobs in 1990. Timber employment has continued to decline since the 1990s, falling from a recent high of 561 jobs in 2003 to 249 jobs in 2014, reaching a recent low of 216 jobs in 2009 (Table 3.22-4; Figure 3.22-4). Tongass National Forest-related employment in logging and sawmilling declined from 199 jobs in 2003 to 147 in 2014, with a low of just 86 jobs in 2012. Non-Tongass timber employment also declined over this period, falling from a recent high of 362 jobs in 2003 to 102 jobs in 2014, a decrease of 77 percent (Table 3.22-4). Sawmill employment has historically been supported by Forest Service timber sales, with state timber harvest also contributing. Logging employment is generated from all ownerships, including Native Corporation lands.

Table 3.22-4
Timber Industry Employment in Southeast Alaska, 2002-2014

Year[1]	Tongass Logging	Tongass Sawmill	Total Tongass-Related Employment	Other Logging	Other Sawmill	Total Other Timber Employment	Total Timber Industry Employment
2002	63	110	173	299	40	339	512
2003	108	91	199	298	64	362	561
2004	82	95	177	220	53	273	450
2005	88	96	184	263	52	315	499
2006	81	77	158	217	46	263	421
2007	44	70	114	225	63	288	402
2008	52	70	122	118	24	142	264
2009	48	39	87	110	19	129	216
2010	61	46	107	133	7	140	247
2011	62	47	109	150	3	153	262
2012	39	47	86	147	11	158	244
2013	75	48	123	106	14	120	243
2014	87	60	147	95	7	102	249
Average	**68**	**69**	**137**	**183**	**31**	**214**	**352**

Note::
[1] Data are presented by calendar year.
Source: USDA Forest Service 2015l

Figure 3.22-4
Timber Industry Employment in Southeast Alaska, 2002-2014



Harvest

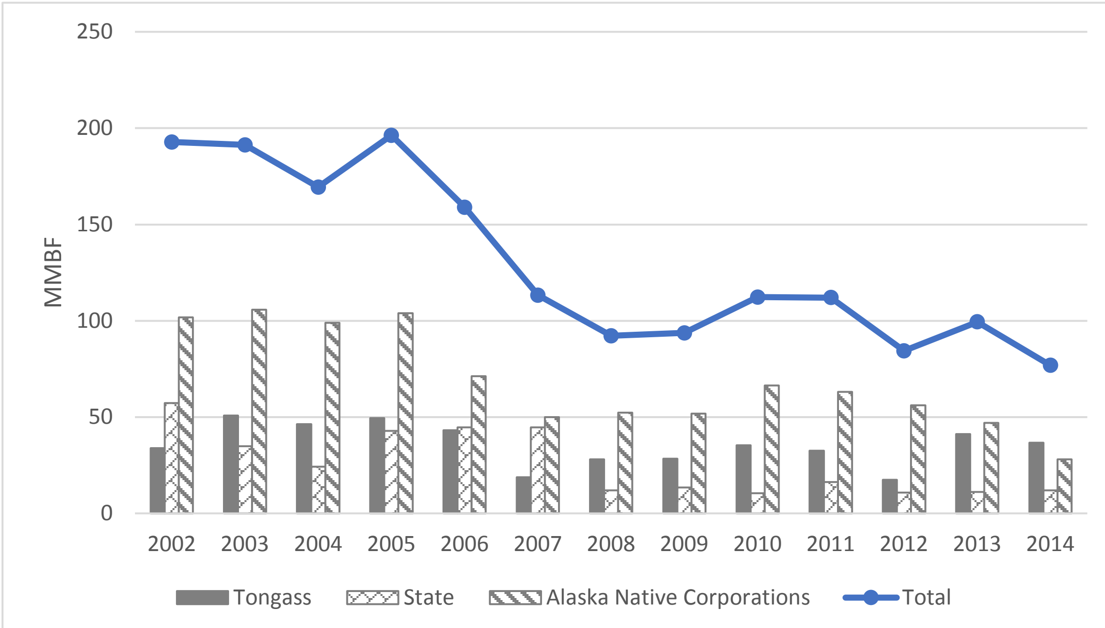
Timber harvest in Southeast Alaska also peaked in the late 1980s, with harvest levels slightly below 1,000 million board feet (MMBF) in 1989 and 1990. Total harvest in 2011 was 76.8 MMBF, about 8 percent of peak levels Harvest on the Tongass accounted for almost half (48 percent, 36.7 MMBF) of this total, with 37 percent (28.1 MMBF) of the total provided by Native Corporation lands and 16 percent (12.0 MMBF) provided by the State of Alaska (Table 3.22-5; Figure 3.22-5).

Table 3.22-5
Timber Harvest in Southeast Alaska by Ownership, 2002–2014

Year[1]	Tongass National Forest	State of Alaska[2]	Native Corporation	Total
2002	33.8	57.3	101.7	192.8
2003	50.8	34.8	105.7	191.3
2004	46.3	24.2	98.9	169.4
2005	49.5	42.9	103.9	196.3
2006	43.1	44.6	71.2	158.9
2007	18.7	44.6	50.0	113.3
2008	28.0	11.9	52.3	92.2
2009	28.4	13.5	51.8	93.7
2010	35.4	10.5	66.4	112.3
2011	32.6	16.3	63.1	112.0
2012	17.5	10.8	56.1	84.4
2013	41.2	11.2	47.0	99.4
2014	36.7	12.0	28.1	76.8
Average	**35.5**	**25.7**	**68.9**	**130.2**

Notes:
[1] Timber harvest volume reported by calendar year, in million board feet (MMBF), and includes both sawlog and utility.
[2] State of Alaska includes Division of Forestry, Mental Health Trust, and University of Alaska public lands.
Source: USDA Forest Service 2015l

Figure 3.22-5
Timber Harvest in Southeast Alaska by Ownership, 2002-2014



Current Status of the Industry

Existing Sawmills

The wood products industry in Southeast Alaska in its current form consists of individual- and family-owned sawmills and independent logging businesses. The Forest Service has conducted an annual onsite survey of sawmills across the Tongass National Forest since 2000. The most recent available survey, conducted for calendar year 2013, identified 10 active and 2 inactive sawmills, with a total installed production capacity of 116.9 MMBF (Table 3.22-6). To maintain consistency, the only mills included in the survey are those assessed in previous survey years. The original list of mills to be surveyed, initially identified in 2000, consisted of 20 sawmills that regularly operated and met the criteria for medium to large size classification. Of these 20 mills (increased to 22 in 2007), 10 were active and 2 were inactive in 2013, as noted above; the other 10 had been decommissioned or were no longer in production (Parrent and Grewe 2014). No new sawmills of equal size classification have been established since 2000. However, many small sawmills that operate on a seasonal, part-time, or contingent basis operate across the region, each with varying degrees of success. These mills do not meet the criteria originally established for the mill survey and are, therefore, excluded from the annual Tongass Sawmill Capacity and Production Report.

Table 3.22-6
Forest Service Mill Survey: Estimated Mill Capacity, Production, and Utilization, 2013

Mill Name[1,]	Location	Estimated Capacity (MMBF)[2]	Estimated Production (MMBF)[3]	Percent Utilization
Icy Straits Lumber & Milling Co.[4]	Hoonah	3.0	0.4	13.3%
Viking Lumber Co.	Craig	80.0	15.0	18.8%
D&L Woodworks	Hoonah	1.8	0.1	3.1%
Western Gold Cedar Products	Thorne Bay	6.5	0.7	10.0%
Falls Creek Forest Products[5]	Petersburg	3.0	0.02	0.7%
Good Faith Lumber Co. LLC[6]	Thorne Bay	5.5	0.8	14.3%
Thuja Plicata Lumber	Thorne Bay	7.5	0.3	3.3%
Porter Lumber Co.	Thorne Bay	2.5	0.2	8.1%
St. Nick Forest Products[7]	Craig	1.2	0.2	14.8%
The Mill	Petersburg	6.0	0.1	1.0%
Total Active[8]	**Southeast Alaska**	**116.9**	**17.6**	**15.0%**
Northern Star Cedar (NSC)	Thorne Bay	2.5	Idle	NA
Thorne Bay Enterprises	Thorne Bay	1.0	Idle	NA
Total Idle	**Southeast Alaska**	**3.5**	**Idle**	**NA**
Overall Total[8]	Southeast Alaska	120.4	17.6	14.6%

Notes:
MMBF – million board feet
NA – not applicable
[1] Data is presented for those mills included in the Forest Service's annual onsite survey only.
[2] Estimated mill capacity is an estimate of the processing capability of the mill based on the amount of net sawlog volume (Scribner log scale) that could be utilized by the mill as currently configured, during a standard 250-day per year, two shifts per day, annual operating schedule, not limited by availability of employment, raw materials or market.
[3] Estimated Mill Production is the estimated net sawlog volume used during the year to manufacture sawn products.
[4] Estimated capacity for the Icy Straits mill was reduced from 21 MMBF as a result of a major mill fire in July 2010. Mill production occurred prior to the fire.
[5] Formerly Southeast Alaska Wood Products.
[6] Formerly Thorne Bay Wood Products.
[7] Formerly W.R. Jones & Son Lumber Co.
[8] Totals may not sum due to rounding.
Source: Parrent and Grewe 2014

Estimated total production for the mills included in the annual mill survey has decreased from 87.1 MMBF in 2000 to a low of 11.5 MMBF in 2011, a net reduction of 75.6 MMBF or 87 percent. Production has increased somewhat since 2011, with total production for these mills estimated to be 17.6 MMBF in 2013 (Parrent and Grewe 2014). This total (17.6 MMBF) represented 15.0 percent of total active processing capacity in 2013, and 14.6 percent of total active and idle capacity (Table 3.22-6). The capacity utilization rate of the last operating medium-sized sawmill in Southeast Alaska (Viking Lumber) in 2013 was estimated at about 19 percent (Table 3.22-6). By comparison, sawmills in Idaho, Oregon, California, and Montana generally utilize more than 80 percent of their capacity, unless there is a severe economic downturn (USDA Forest Service 2011c).

The Tongass National Forest supplied about 13.8 MMBF or 78 percent of the total volume processed by the mills identified in Table 3.22-6 in 2013 (17.6 MMBF), with State lands responsible for most of the remaining 22 percent (Parrent and Grewe 2014). The Tongass share of timber processed locally (13.8 MMBF) comprised 33 percent of the total volume harvested (41.2 MMBF) on the Tongass in 2013. Viking Lumber processed 15 MMBF or 85 percent of the total volume (17.6 MMBF) processed in 2013 (Table 3.22-6).

Additional Sawmills

As noted above, the annual mill survey discussed above is not a comprehensive inventory of all sawmills in Southeast Alaska. The number of active mills and timber operators in Southeast Alaska varies at any given time. A review of business licenses in January 2015, for example, identified 12 additional sawmills in Southeast Alaska that are not included in the survey summarized in Table 3.22-7. The additional mills identified through this business license review are listed in Table 3.22-7. The University of Montana's Bureau of Business and Economic Research (BBER), in conjunction with the Pacific Northwest Forest (PNW) Inventory and Analysis Program of the U.S. Forest Service, conducted a census of timber processors in Alaska in 2011 and identified 27 sawmills in Southeast Alaska, with almost half this total (12 facilities) located on Prince of Wales Island (Berg et al. 2014).

Table 3.22-7
Additional Sawmills in Southeast Alaska Based on a Review of Business Licenses, 2015

Mill Name[1]	Location
Cutting Edge Wood Products	Ketchikan
Dale R. Bakula Construction	Ketchikan
Eagle Wood Products	Craig
Fair & Square Milling	Coffman Cove
JR's Custom Lumber and Resaw	Thorne Bay
Mike Allen Enterprizes	Wrangell
Pacific Log and Lumber	Ketchikan
Peavey Log	Thorne Bay
Seakwood.com	Petersburg
The Woodshed	Petersburg
Windy Point Sawmill and Bobcat Service	Craig
Wood Marine	Klawock

Note:
[1] These businesses were identified through a review of business licenses in January 2015. This table identifies additional sawmills that are not included in the Forest Service's mill survey (see Table 3.22-6).

Data compiled by the Forest Service and the State of Alaska for the Big Thorne Project identified 25 mills and timber operators on Prince of Wales Island, including six of the active sawmills and two inactive sawmills identified in the 2013 mill survey (USDA Forest Service 2013d). The other, smaller mills on the island produce sawtimber and other value-added products. The highest concentration of small mills is in the Goose Creek Industrial Subdivision of Thorne Bay, but there are also operators in Craig, Klawock, Coffman Cove, and Edna Bay. These smaller operators included 14 businesses not included in the Tongass Sawmill Capacity and Production Report or identified in the January 2015 business license review. Smaller operators located elsewhere in the region, include small mills in the towns of Wrangell, Petersburg, Ketchikan, Juneau, Hoonah, Gustavus, and Tenakee Springs.

R10 Limited Export Shipment Policy

Initially established in 2007, the Limited Export Policy is intended to boost appraised timber values, provide economic sale opportunities for purchasers, and provide additional processing options for purchasers. The policy has continued since 2007 with modifications that have provided additional opportunities for purchasers. The limited export policy is reviewed on an annual basis. The Regional Forester noted in the 2015 review that, while improvements occurred nationally over the past three years, challenges continue for purchasers seeking domestic markets for Alaska timber. As a result of this review, the limited export policy will remain in place for calendar year 2015 (USDA Forest Service 2015m).

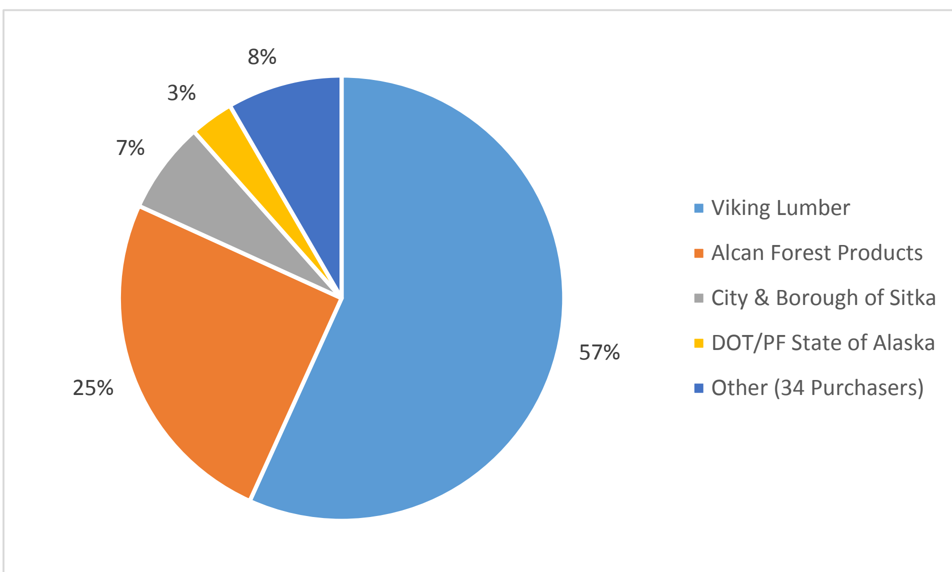
The current policy allows the limited export of unprocessed western hemlock and Sitka spruce logs up to 50 percent of the total sale sawtimber volume upon Regional Office approval. In 2012, the Regional Forester agreed to begin reviewing requests to allow increased export of these species on a case-by-case basis, in exchange for purchasers providing an equivalent amount of Alaska yellow-cedar to small business operators who would process the timber locally. This review process will also continue in 2015 (USDA Forest Service 2015m).

Volume Under Contract

Volume under contract refers to the volume included in timber sales that have been purchased, but not yet logged or only partially logged. Volume under contract is, therefore, essentially a measure of inventory that changes on a regular basis, increasing as timber is sold and added to the total and decreasing when sales are actually harvested.

Various purchasers had an estimated total of 113.8 MMBF of uncut timber under contract with the Forest Service in July 2015 (USDA Forest Service 2015n). Viking Lumber accounted for more than half (57 percent; 64.6 MMBF) of this total, followed by Alcan Forest Products LLP with 25 percent (28.5 MMBF), and the City and Borough of Sitka with 7 percent (7.6 MMBF) (Figure 3.22-6). (Note that the volume under contract with Sitka was the result of a settlement sale associated with the Blue Lake hydropower expansion). Viking Lumber was the only one of these three purchasers operating a mill in Southeast Alaska in 2015. Alcan Forest Products, based in Ketchikan, does not operate a processing facility on the Tongass, but must follow the Limited Export Shipment Policy, and sell logs that cannot be exported to a processing facility in the state. Thirty-four other purchasers had uncut volume under contract; in all cases but three, the amount under contract was less than 1 MMBF (USDA Forest Service 2015n).

Figure 3.22-6
Volume under Contract by Owner, 2015



Source: USDA Forest Service 2015n

Demand Indicators

Demand can be thought of as the different amounts of a product buyers are willing to purchase at different prices. Demand is a series of price-quantity relationships, not a single number. The same is true of supply. The quantity and price of goods produced and consumed is determined by the combination of supply and demand. When we talk about timber on the Tongass we are talking about a range of products that are not necessarily interchangeable with one another or other sources of timber. Timber includes a number of different species and log types range from utility logs to high quality saw logs. Old-growth and young-growth timber also differ from one another.[2] Markets and demand and the associated prices for these timber products can vary substantially. The ability of timber to satisfy markets also differs based on the location of the stands relative to mills and other infrastructure.

Accurately projecting future demand is difficult, with the interaction between demand and supply ultimately determining trends in markets. Market demand for Southeast Alaska timber and wood products depends upon numerous difficult to predict factors, including changes in technology, growth and exchange rates in key markets, changes in consumer tastes and preferences, as well as developments in other producing regions whose products compete with those of Alaska.

Pacific Northwest Research Station Projections

For the past 25 years, the Forest Service has commissioned the PNW Research Station to prepare a number of long-term projections of demand for Tongass timber over time, including Brooks and Haynes (1990, 1994, 1997) and Brackley et al. (2006a, 2006b). The PNW Research Station has prepared a similar analysis in support of the current proposed amendment of the Forest Plan (Daniels 2015). Using methods adapted from the previous PNW Research Station analyses, Daniels estimates demand for Tongass timber using a materials balance approach based on projected trends in product markets. The analysis projects future demand for timber (“derived demand”) based on the overall end-market demand in foreign and domestic markets and the portion of that demand Alaska is likely to fill (based on historic trends).

Timber Products and Existing Markets

The 2015 PNW Research Station study identified five primary timber products harvested from Southeast Alaskan forests: softwood sawlogs, utility logs, softwood lumber, mill residue, and other products. The following subsections summarize the existing markets identified by the study for each product type.

Softwood sawlogs. The majority of timber harvested in Southeast Alaska is exported to Pacific Rim (China, Japan, South Korea) destinations as unprocessed sawlogs. More than 90 percent of exported logs were sent to Pacific Rim destinations in 2005 and 2011, mainly China. Modest shipments were also sent to Canada.

Utility logs. Much of the harvested volume of utility logs is left in the woods because of their low economic value. Daniels (2015) was unable to find evidence of any existing markets for this material.

Softwood lumber. Data from 2002 to 2013 showed that shipments of Southeast Alaskan lumber were sent to markets in the Pacific Rim, the lower 48 states, and

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[2] Young-growth timber refers to forest growth that has regenerated naturally or has been planted after some disturbance to the previous forest growth. Forms of disturbance include clearcut harvest, serious fire, catastrophic windthrow, and insect attack.

remained locally in Alaska. Based on data compiled as part of the Forest Service's annual onsite survey of sawmills, the five year average share (2009 to 2013) of lumber production sent to these markets was 57 percent to the Lower 48 states, 32 percent to Pacific Rim, 10 percent to local Alaska markets, and 1 percent to Canada. While these data are for those mills included in the survey only (see the above discussion), Daniels (2015) note that these findings are consistent with the 2005 and 2011 BBER surveys.

Mill residue. Using data compiled as part of the BBER surveys, Daniels (2015) were able to identify the proportion of mill residues that were sold (88.2 percent) versus unsold (11.8 percent), and the portion of the sold residues that were sold for energy purposes (32.1 percent) versus other uses (56.0 percent). Daniels (2015) found little evidence that markets for residue from Alaska processors exist outside of Alaska.

Other products. Other products identified through the BBER surveys include bowls, furniture, house logs, molding, shakes, posts and poles, and siding, combined here as other to capture niche markets. The majority of these products remained in Alaska or were shipped to the Lower 48 States, with modest shipments sent to Canada and the Pacific Rim.

Baseline Model and Scenarios

The PNW Research Station study developed a baseline model that was then used to evaluate three potential scenarios representing different potential futures for timber harvest in Southeast Alaska (Daniels 2015).

Baseline Model. Baseline demand projections Tongass timber were developed in three stages: 1) historic estimates of Alaska forest products output by product and destination were gathered and projected from 2015 to 2030; 2) the raw material requirements necessary to support this projected output were estimated by product type; and 3) the timber harvest equivalent was calculated and allocated by owner (Daniels 2015). The resulting baseline projections of timber harvest by product are shown in Table 3.22-8. Projected baseline harvest by owner is shown in Table 3.22-9 and Figure 3.22-7. The majority of projected harvest is allocated to Native Corporation lands, followed by the Tongass and State of Alaska lands (Table 3.22-9; Figure 3.22-7).

Table 3.22-8
Projected Baseline Timber Harvest in Southeast Alaska by Product Type (MMBF)

Year	Sawlog exports	Sawmills	Utility logs	Mill Residue	Other Products	Total
2015	84.5	12.9	7.5	12.1	1.5	118.7
2016	86.6	14.3	7.4	13.4	1.5	123.3
2017	88.7	14.5	7.3	13.5	1.6	125.6
2018	90.8	14.7	7.1	13.7	1.6	127.9
2019	92.9	14.9	7.0	13.8	1.6	130.2
2020	95.0	15.1	6.8	14.0	1.6	132.5
2021	97.1	15.3	6.7	14.2	1.6	134.8
2022	99.2	15.5	6.6	14.3	1.6	137.1
2023	101.3	15.6	6.4	14.5	1.6	139.4
2024	103.3	15.8	6.3	14.7	1.6	141.7
2025	105.4	16.0	6.1	14.8	1.6	144.0
2026	107.5	16.2	6.0	15.0	1.6	146.4
2027	109.6	16.4	5.9	15.2	1.7	148.7

Table 3.22-8 (continued)
Projected Baseline Timber Harvest in Southeast Alaska by Product Type (MMBF)

Year	Sawlog exports	Sawmills	Utility logs	Mill Residue	Other Products	Total
2028	111.7	16.6	5.7	15.3	1.7	151.0
2029	113.8	16.8	5.6	15.5	1.7	153.3
2030	115.9	16.9	5.4	15.6	1.7	155.6

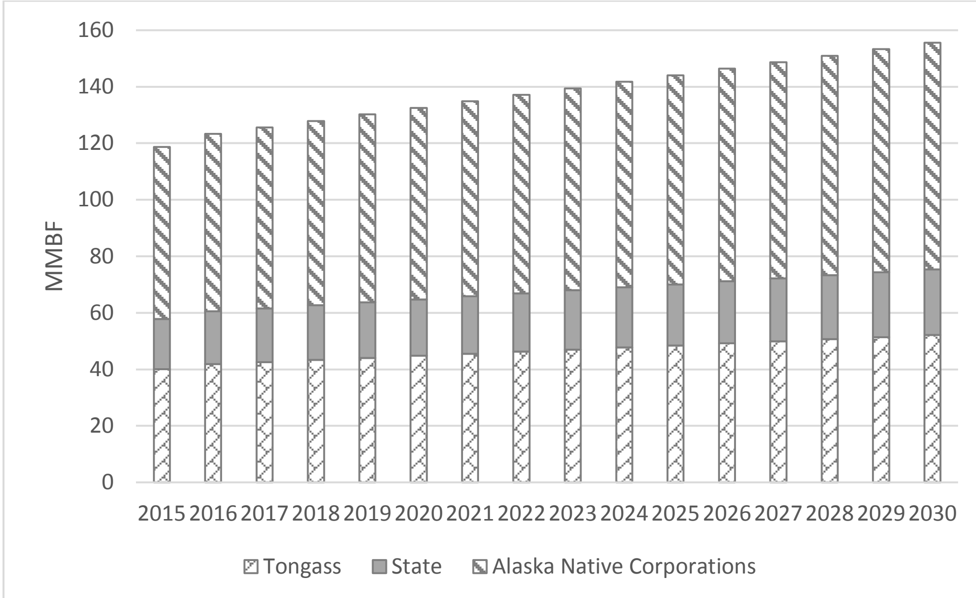
[1] Projected harvest levels by product type are based on projected overall end market demand and the portion of that demand Southeast Alaska is likely to fill.
[2] A summary overview of these product types is provided in the main text.
Source: Daniels 2015

Table 3.22-9
Projected Baseline Timber Harvest in Southeast Alaska by Owner (MMBF)

Year	Tongass	State	Native Corporations	Total
2015	40.0	17.8	60.8	118.7
2016	41.8	18.7	62.8	123.3
2017	42.6	19.0	64.0	125.6
2018	43.3	19.3	65.3	127.9
2019	44.0	19.7	66.5	130.2
2020	44.8	20.0	67.7	132.5
2021	45.5	20.3	69.0	134.8
2022	46.2	20.6	70.2	137.1
2023	47.0	21.0	71.5	139.4
2024	47.7	21.3	72.7	141.7
2025	48.4	21.6	74.0	144.0
2026	49.2	22.0	75.2	146.4
2027	49.9	22.3	76.5	148.7
2028	50.7	22.6	77.7	151.0
2029	51.4	22.9	78.9	153.3
2030	52.1	23.3	80.2	155.6

[1] Projected harvest levels by owner are based on projected overall end market demand and the portion of that demand Southeast Alaska is likely to fill, allocated by land ownership.
Source: Daniels 2015

Figure 3.22-7
Projected Timber Harvest in Southeast Alaska by Ownership, 2015-2030



The following sections discuss the three potential scenarios developed by Daniels (2015). The first scenario (Scenario 1) establishes a timeline for the young-growth transition and projects demand assuming the other conditions assumed in the Baseline Model remain unchanged. The second scenario builds upon the transition modeled in Scenario 1 by adding an expansion of bioenergy markets. Scenario 3 also builds on the transition modeled in Scenario 1, but assumes increased demand for lumber from the Lower 48 States.

Scenario 1. This scenario assumes that the transition to young growth will occur by 2025, with old-growth harvest constrained to 5 MMBF for micro-sales from that point onward. The key identified impact from a demand perspective would be on markets for high quality lumber. Daniels (2015) assumed that purchasers in the Pacific Rim would not be willing to substitute dimension grade lumber for shop grade.[3] They also assumed that U.S. demand for dimensional lumber from Southeast Alaska would remain unchanged from the baseline projections. The transition to young growth would in effect result in a reduction in Pacific Rim demand for lumber that would in turn cause a decline in harvest from the Tongass relative to the baseline rate. Total harvest on the Tongass is, as a result, projected to drop by 3.4 MMBF from 2024 to 2025. By 2030, Scenario 1 would see a 5.5 MMBF decline in harvest on the Tongass relative to the Baseline Model (Table 3.22-9; Figure 3.22-8).

[3] Using definitions from the Western Wood Products Association, Daniels (2015) characterize dimension lumber as a structural framing product graded for strength and other properties, with appearance of secondary importance. Shop lumber is characterized as an industrial product graded for the recovery of clear pieces typically available from old-growth logs. Shop lumber is characterized as generally higher quality and worth more than dimension lumber. Data from the 2011 BBER survey indicate that Alaska lumber shipments to Pacific Rim markets consisted entirely of higher quality shop grade lumber (Daniels 2015).

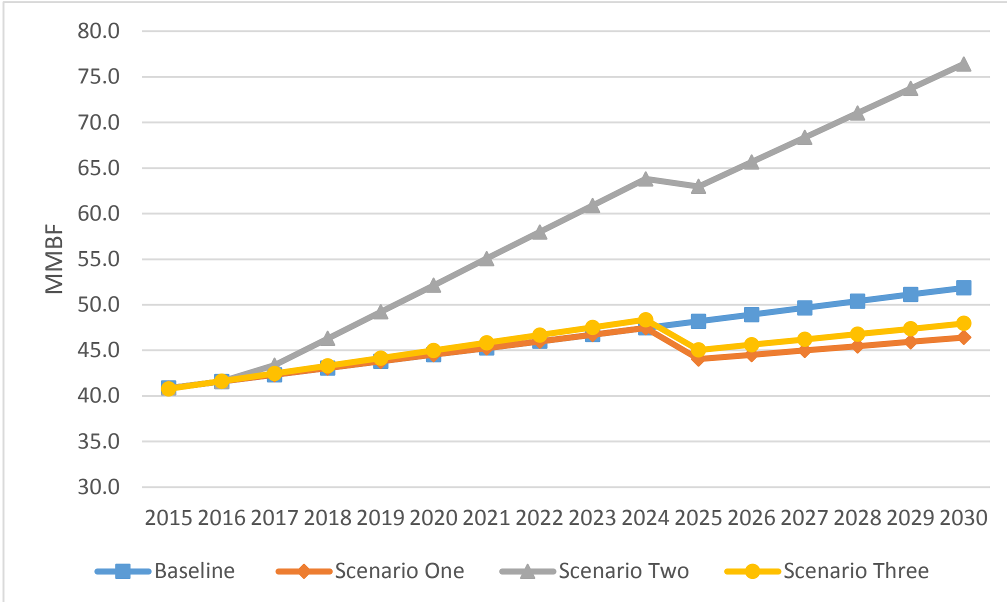
Scenario 2. Scenario 2 builds upon Scenario 1 by adding markets for wood energy products based on the assumption that 30 percent of existing heating fuel use in Southeast Alaska would be replaced by wood based fuel over time (Daniels 2015). This scenario is based on a Forest Service goal to support a transition of 30 percent of the heating oil use in Southeast Alaska to biomass over the next decade (Deering 2014). Timber harvest is assumed to provide two main sources of wood based fuel – sawmill residues and low- and utility-grade logs – that could be used to meet this 30 percent bioenergy conversion target. Logging slash is not considered a suitable potential source by Daniels (2015) because of its high moisture content and associated transport costs.

Based on an assumed 5 percent annual rate of conversion (starting in 2016), 65 percent combustion efficiency, and 10 percent moisture content, Daniels (2015) estimates that the wood-based fuel available under this scenario would be able to meet slightly more than two-thirds of the 30 percent conversion target by 2030. Harvest on the Tongass would be considerably higher than the baseline projection under this scenario based on the growth of markets for mill residues and low and utility grade logs (Table 3.22-10; Figure 3.22-8). Harvest under this scenario would also be substantially higher than the baseline projections for Native Corporation and State of Alaska lands.

Table 3.22-10
Projected Timber Harvest on the Tongass under the Baseline Model and Scenarios 1, 2, and 3 (MMBF)

Year	Baseline	Scenario One	Scenario Two	Scenario Three
2015	40.9	40.9	40.9	40.8
2016	41.6	41.6	41.6	41.6
2017	42.3	42.3	43.4	42.5
2018	43.1	43.1	46.3	43.3
2019	43.8	43.8	49.2	44.1
2020	44.5	44.5	52.1	45.0
2021	45.3	45.3	55.1	45.8
2022	46.0	46.0	58.0	46.7
2023	46.7	46.7	60.9	47.5
2024	47.5	47.5	63.8	48.4
2025	48.2	44.0	63.0	45.0
2026	48.9	44.5	65.7	45.6
2027	49.7	45.0	68.4	46.2
2028	50.4	45.5	71.0	46.8
2029	51.1	45.9	73.7	47.4
2030	51.9	46.4	76.4	47.9

Figure 3.22-8
Projected Timber Harvest on the Tongass under the Baseline Model and Scenarios 1, 2, and 3



Scenario 3. Scenario 3 differs from Scenario 1 by using a different rate of projected growth for domestic lumber consumption based on the growth rate prior to the 2007-2009 recession, rather than the more conservative (post-recession) growth rate employed in the Baseline Model and Scenarios 1 and 2. Adjusting demand in this way affects Southeast Alaska harvest and production by increasing domestic demand for both lumber and unprocessed logs. Market shares for Southeast Alaska producers are assumed to remain constant. The results of this scenario are more similar to the baseline projections than the other two scenarios, with increased domestic demand partially offsetting the projected young-growth-related reductions described above for Scenario 1 (Table 3.22-10; Figure 3.22-8).

Other Potential Demand Indicators
Another way to consider the potential timber volumes that might be demanded up to and following the young-growth transition is to consider: 1) existing sawmills and demand, and 2) potential lumber and non-lumber applications identified in previous studies.

Existing Sawmills and Demand
The existing mills in Southeast Alaska are generally configured to process old-growth timber, which has been the mainstay of the local industry. Viking Lumber is the largest sawmill presently operating in the region (Table 3.22-6). Viking is also the most modern sawmill in the region, with two processing lines: a large log side that uses a carriage and band mill setup typical of most large log mills in North America; and a small log side that uses an “end-dogging circle saw” as the primary breakdown (Beck Group 2009). In a study conducted for The Nature Conservancy, the Beck Group (2009) indicated that Viking Lumber’s current small log line processes approximately 8 MMBF of logs annually, running one shift per day, 40 hours per week. The Beck Group identified three primary modifications to Viking’s current small log line that would improve productivity (the volume of lumber produced per hour) and recovery rates (the board feet of lumber produced per board feet of lumber used), reduce manufacturing costs,

and allow the small log side to process at least twice the current amount of volume using the same schedule. They also noted that young-growth logs could be run through Viking's small log side as presently configured without much modification, and the proposed modifications could be phased in over time as the supply of young growth increases.

The Viking mill is the only facility in Southeast Alaska with small diameter processing capabilities. Other existing regional sawmills have equipment designed for relatively large-diameter material and cannot efficiently process smaller, young growth timber (Alexander et al. 2010). Manufacturing costs are typically higher for smaller mills because they have lower productivity rates relative to larger more complex mills, especially when sawing smaller logs. As a result, smaller mills in Southeast Alaska tend to process larger logs and produce high value products such as appearance grade lumber and cedar shingles. These mills are typically very simple in design and cannot be practically modified to process young-growth logs (Beck Group 2009). The Beck Group (2009) noted that, combined, these smaller mills on Prince of Wales Island processed around 5 MMBF a year, and observed that the Forest Service should be able to supply a sufficient volume of logs for these operations from salvage and micro-sales for the foreseeable future. From 2009 to 2013, the smaller mills included in the Forest Service's longitudinal mill survey (that is, the mills other than Viking Lumber), together, processed an annual average volume of less than 5 MMBF. In 2013, for example, these mills, together, processed an estimated 2.6 MMBF of sawlog volume (Table 3.22-6).

Potential Lumber Markets

Old-growth trees on the Tongass typically yield significant volumes of clear or nearly clear lumber with tight grain suitable for appearance grade lumber and other high value applications. In contrast, young-growth trees typically grow faster and have wide growth rings, as well as more limbs, which results in lumber with many small knots. These characteristics made young growth less desirable for appearance grade lumber, but do not restrict its use in structural lumber applications, such as dimension lumber for house building (Beck Group 2009). Citing work by the Forest Service's Sitka Wood Utilization Center, the Beck Group (2009) identifies a potential local market for structural lumber in Alaska of approximately 100 MMBF per year. This potential market could be served by products using locally processed young-growth timber at some point in the future but obstacles to bringing Alaskan structural lumber to Alaska markets at competitive prices currently exist, including the lack of grading agency support in Southeast Alaska, and the existing transportation infrastructure in Southeast Alaska.

Information on existing facilities in the Lower 48 states provides general insight regarding the volume of timber that new or modified young-growth facilities could potentially process. As part of their evaluation for The Nature Conservancy, the Beck Group (2009) identified sawmills in the coastal regions of Oregon and Washington that currently process western hemlock for framing lumber production, using comparable equipment configurations as Viking Lumber to process logs of comparable size and quality. These generally comparable sawmills processed on average 23 MMBF of logs per year, based on operating a single shift per day (Beck Group 2009). Another young-growth evaluation identified the Vaagen Brothers mill in Colville in eastern Washington as an example of the type of facility that could be developed to process young-growth timber in Southeast Alaska. In 2014, the Vaagen Brothers mill in Colville produced a total of 273 MMBF of lumber; approximately 135 to 140 MMBF of this total was also sawn at the Colville mill. The remainder was sawn at one of Vaagen Brothers' other facilities in Midway, British Columbia or Usk, Washington and transported to the Colville facility for surfacing. The overrun for the Colville sawmill is approximately 1.2, meaning that approximately 113 to 117 MMBF of timber was required to produce this volume (135 to 140 MMBF) (Vaagen 2015).

Non-Lumber Applications

Potential non-lumber applications of young-growth material, including logging debris (tops, limbs, and unmerchantable stems), that have been identified in past studies include the production of wood pellets and briquettes for home and industrial heating use, electrical cogeneration uses, and biomass for central heating. Drawing mainly from the scenarios evaluated in the young-growth study prepared by the Beck Group (2009), potential raw material requirements to operate new facilities that would manufacture wood pellets and briquettes and generate electricity using cogeneration technology are summarized in Table 3.22-11. The sizes of these facilities are based on the scenarios evaluated in the Beck Group report. Larger facilities could be developed if markets were to develop and a sufficient supply of young-growth material were available. The following sections provide a brief overview of these potential non-lumber applications.

Table 3.22-11
Potential Non-Lumber Applications of Young Growth Timber in Southeast Alaska

	Raw Material Requirements			
Product	**Green (MBF)** [1/]	**Green (tons)** [2/]	**Bone Dry (tons)**	**Final Product (Pellets/ Briquettes/ Electricity)**
Wood Pellets	2,944	18,400	7,700	7,573 tons
Briquettes	3,097	19,356	8,100	8,604 tons
Electrical Cogeneration	2,485	15,532	6,500	1,950 MWh

MWh – megawatt hours
[1] Assumes 1 green ton = 160 board feet
[2] Assumes green material has 58 percent moisture content

Wood Pellets. Most wood pellet plants in the U.S. have historically relied on sawmill residues (sawmill dust and planer shavings) for their raw materials, but other pellet plants that rely on roundwood have recently started operation, including facilities in British Columbia, Colorado, and Arizona. Existing facilities in the United States typically range from about 10,000 tons to more than 500,000 tons of wood pellet production per year (Beck Group 2009). Using information from surveys conducted by the Forest Service's Sitka Wood Utilization center and the University of Alaska, the Beck Group estimated that current annual demand for wood pellets from households in Southeast Alaska is approximately 5,400 tons. For the purposes of analysis, the Beck Group evaluated the feasibility of a potential wood pellet facility capable of producing about 7,500 tons of wood pellets a year, which would require about 18,400 tons of green material to operate (assuming 58 percent average moisture content). Their analysis found that this size facility would return a positive value to the raw material, but this value would be less than the delivered cost of forest residues (logging debris and slash). This finding, they concluded, suggests that this type of facility were it to be established would likely seek lower cost mill residues (sawdust, bark, shavings, and chips), rather than roundwood or forest residues that would require transport.

Briquettes. Wood briquettes, also known as firelogs or biobricks, are another non-lumber product that could be produced using young-growth material. Unlike wood pellets, briquettes do not require a specialized heating appliance for use in residential or other heating systems. Briquettes can be burned in regular household wood stoves and fireplaces, as well as industrial and institutional boiler systems. Recognizing that markets would need to be developed over time, the Beck Group evaluated the feasibility of a briquette plant capable of producing 8,600 tons of briquettes per year, which would require about 8,100 tons of bone dry material to operate. Similar to their conclusion with respect to wood pellets, the Beck Group found that this size briquette facility would return a positive value to the raw material, but this value would be less than the delivered cost of logging residues, again suggesting that were this type of facility to be developed, it would likely seek lower cost mill residues.

Electrical Cogeneration. Electrical cogeneration is an established technology that yields both electricity and heat. Two common sources of biomass for cogeneration fuels are forest residues (logging debris and slash) and mill residues (sawdust, bark, shavings, and chips). For the purposes of analysis, the Beck Group evaluated the feasibility of a 275 kilowatt (KW) woody biomass fueled steam turbine generator, which they identified as the smallest practical capacity for this type of facility. A 275 KW turbine operating 8,500 hours a year would generate about 1,950 megawatt-hours (MWh) of electricity. Annual operation of this facility would require an estimated 15,500 tons of green material (Beck Group 2009). The analysis prepared by the Beck Group found that this size facility would return a positive value to the raw material, but would still likely seek lower cost materials where possible.

Biomass Central Heating. Several programmatic efforts have been initiated to explore opportunities to increase the utilization of wood for energy and bio-fuels production in Alaska, including the Alaska Wood Energy Development Task Group and the Southeast Alaska Wood-to-Energy Initiative, the latter initiated as part of the Tongass Transition Framework. Wood biomass systems have already been successfully installed in non-industrial facilities in Alaska. Systems presently operating in Southeast Alaska include the system used to heat the Craig elementary and middle schools and the nearby community pool, which operates on mill residues. Other operating systems in Southeast Alaska include those serving schools at Thorne Bay and Coffman Cove on Prince of Wales Island, the Forest Service's Southeast Alaska Visitor Information and Discovery Center and the GSA Federal office building in Ketchikan, the Ketchikan Public Library, and the U.S. Coast Guard facility in Sitka (USDA Forest Service 2013g). As noted with respect to the PNW Research Station's Scenario 2 (above), the Forest Service has a goal to support a transition of 30 percent of the heating oil use in Southeast Alaska to biomass over the next decade (Deering 2014).

Recreation and Tourism

Recreation and Tourism in Southeast Alaska

Trends in Visitation. Summer visitors to Southeast Alaska more than doubled between 1993 and 2006, increasing from 502,800 in 1993 to 1,160,000 in 2006 (McDowell Group et al. 2007). Statewide, the total number of visitors increased by 40 percent over the same period. The relatively large increase in visitation to Southeast Alaska over this period reflects the dramatic growth in the number of cruise ship passengers visiting the region. An estimated 1,037,000 people visited Southeast Alaska in 2011, with most of these visitors (85 percent) arriving by cruise ship (McDowell Group 2012a). Additional information on trends in visitation is provided in the *Recreation and Tourism* section of this EIS.

Employment and Contribution to the Regional Economy. Recreation and tourism-related employment is difficult to accurately quantify because visitors spend their money throughout the local economy. As noted above, recreation and tourism is not classified or measured as a standard industrial category. Components of travel and tourism activities are instead partially captured in other economic sectors, such as retail trade (e.g., grocery stores and gift shops), transportation, hotels and other lodging places, and amusement and recreation services.

According to the Alaska DOL, visitor-related jobs accounted for 11 percent of the summer economy in Southeast Alaska in 2014, compared to 4 percent statewide (Bell 2015). Visitor-related jobs in Southeast Alaska are concentrated in Juneau, Ketchikan, and Skagway, which together accounted for more than three-quarters of the regional total in 2014. Transportation is the largest visitor-related economic sector in Southeast Alaska making up about one-third of visitor-related employment, with jobs ranging from whale watching boats, to tour buses, to airlines (Bell 2015). The highest paying visitor-related occupations are also in the transportation sector, including captains and mates of water vessels (Bell 2015).

In a separate study prepared on behalf of the Alaska Department of Commerce, Community, and Economic Development (DCCED), the visitor industry supported 10,800 jobs and $405 million in labor income in Southeast Alaska from May 2013 through April 2014 based on total visitor industry spending of $1.09 billion (McDowell Group 2015). These estimates are for total employment and labor income, meaning that they include workers employed directly by the visitor industry (direct jobs and income), as well as jobs and income supported elsewhere in the economy (indirect and induced jobs and income).[4] A separate estimate of direct employment developed from Alaska DOL and U.S. Census data identified a total of 6,707 direct jobs supported by the visitor industry in 2012/2013 (Table 3.22-3).

Nature-Based Tourism. A study prepared by the Institute of Social and Economic Research at the University of Alaska Anchorage provides insight into the contribution of nature-based tourism to the regional economy. This study, which involved field research conducted in the summers of 2005, 2006, and 2007, focused on a limited number of communities and sought to provide insight into revenues generated, the types of nature-based activities attracting tourists, and the resulting flows of money through the economy (Dugan et al. 2009). The findings of the study indicate that nature-based tourism generates substantial revenues in the region, with an estimated $277 million generated in annual direct business revenues for the companies surveyed in Sitka, Juneau, Chichagof Island, Prince of Wales Island, Petersburg, and Wrangell (Dugan et al. 2009).

Dugan et al. (2009) also found that nature-based tourism takes a number of different forms and the ratio of cruise ship passengers to independent travelers varies by location. Most nature-based activities that originate in Ketchikan, for example, fell into four general categories: flightseeing, marine charters, adventure experiences, and general sightseeing. In all cases, the majority of clients participating in these activities were cruise ship passengers. Nature-based tourism on Chichagof Island, on the other hand, included a mix of cruise ship passengers and independent travelers, depending on the location and activity involved (Dugan et al. 2009).

Recreation on the Tongass National Forest

While it is reasonable to assume that the majority of visitor recreation and tourism activity in the region is related to the natural environment, not all of the

[4] Economic activity in one sector generates activity in others as firms purchase services and materials as inputs (termed "indirect" effects) and employees spend their earnings within the local economy ("induced" effects).

activity generating this employment can be directly linked to the Tongass National Forest. Many visitors experience the Tongass from the deck of a cruise ship without directly using the forest for recreation purposes. In addition, while the Tongass includes approximately 80 percent of the land area in Southeast Alaska, there are other lands that offer wildland recreation opportunities in the region, including 3.3 million acres of National Park Service (NPS) lands, and recreation lands managed by the State of Alaska. Further, other popular recreation and tourism activities, such as saltwater fishing, sea kayaking, and shopping, do not take place on the Tongass.

The Alaska Region of the Forest Service (Region 10) has been participating in the Forest Service's National Visitor Use Monitoring (NVUM) program since 2000. Based on the results of the NVUM program and supplemental survey results for 2008 and 2009, White and Stynes (2010) calculated a visitation estimate of 1,885,500 annual visits to the Tongass National Forest, with 71 percent of these visits made by local residents.[5] Half of Alaska residents surveyed who live in Southeast Alaska reported using a boat or plane to access the national forest. Almost half (49.7 percent) of non-resident visits to the Tongass National Forest involved the use of a guide or outfitter at some point, with local cruises, wildlife viewing, and flightseeing reported most frequently. Alaska residents in contrast were found to very rarely use outfitters or guides (White and Stynes 2010). More detailed information on recreation use on the Tongass is presented in the *Recreation and Tourism* section of this EIS.

Spending profiles were estimated for residents and non-residents visiting the Forest based on data compiled during the NVUM surveys. Average spending per Forest visit was estimated to be $46.03 and $341.58 for residents and non-residents, respectively, with every 10,000 visits (a mix of residents and non-residents) supporting 13.7 direct jobs and 3.9 jobs elsewhere in the regional economy. Using these coefficients, White and Stynes (2010) estimated that 1,885,513 annual visits generated about $250 million in spending and supported 2,589 direct jobs and an additional 728 jobs elsewhere in the regional economy. This overall estimate is equivalent to about 30 percent of the regional visitor estimate developed for Alaska DCCED (McDowell Group 2015), and the direct component is about 38 percent of the direct jobs estimated by Southeast Conference (2014).

Commercial Fishing and Seafood Processing

Salmon accounted for more than half (58 percent) of the total commercial catch in Southeast Alaska in 2013, with the remainder divided among halibut (15 percent), sablefish (9 percent), crab (6 percent), herring (4 percent), and shellfish (7 percent) (Warren 2014). There is an important connection between salmon and other wildlife and fish species on the Tongass. Crab, halibut, herring, bears, eagles, and other species depend on the juvenile salmon produced in the Tongass streams and lakes and the annual return of millions of salmon. As a result, management decisions that affect salmon indirectly affect other species that are commercially fished. These relationships are, however, poorly understood and difficult to quantify. The commercial fishing discussion presented in this section, therefore, focuses on the salmon fishery. Data available for the seafood processing industry, however, do not allow for an easy distinction between salmon processors and

[5] More recent estimates based on NVUM Round 3 (2010 to 2014) surveys are discussed in the Recreation and Tourism section of this EIS. Based on these surveys, an estimated total of 1,836,000 annual visits were identified (USDA Forest Service 2015o).

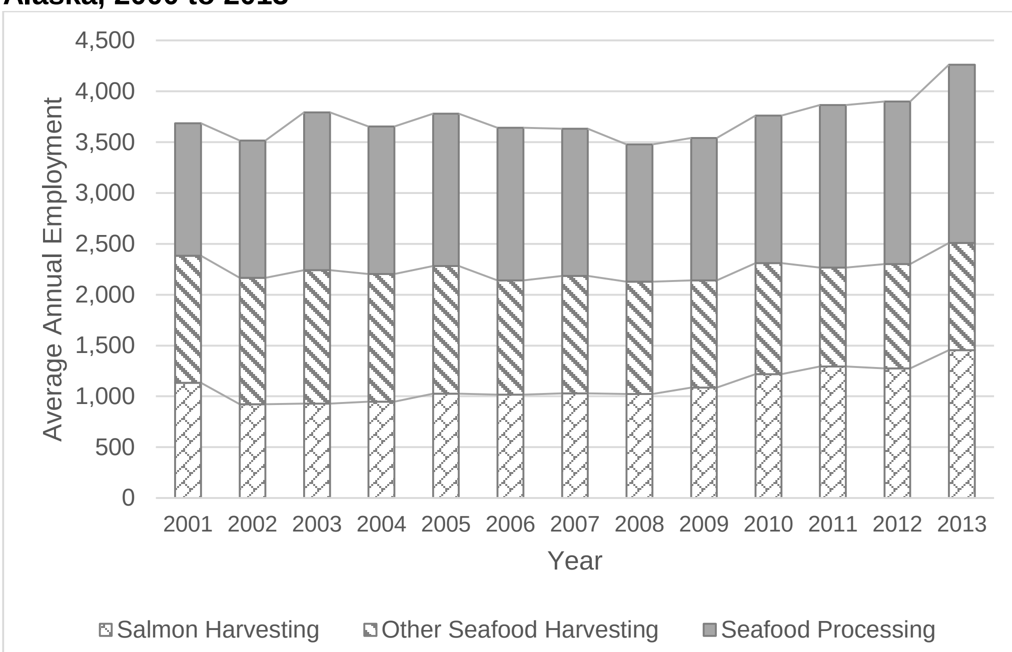
other firms. Data presented for the seafood processing sector, therefore, include the entire seafood processing industry.

Commercial fish harvest in the waters of Southeast Alaska can fluctuate widely from year to year. Overall, recent commercial salmon harvest (since early to mid-1990s) has generally been high but with large fluctuations in the last decade due to the relatively weak returns of pink salmon in even years. Pink salmon have averaged 76 percent of total commercial harvest since 1962 (Conrad and Gray 2014) (see Figures 3.6-1 and 3.6-2 in the *Fish* section of this EIS). Record harvest of salmon occurred in 2013, with 112 million salmon captured.

Based on the estimate of salmon produced from streams originating in the Tongass National Forest, estimated annual commercial salmon harvest from 1984 to 2013 has averaged over 176 million pounds, with a wholesale value (ex-vessel value) of more than $93 million (adjusted to 2013 dollars) (Figure 3.6-3 in the *Fish* section of this EIS). More than 335 million pounds of salmon were harvested in Southeast Alaska in 2013 with a wholesale value of more than $153 million (Figure 3.6-3).

Employment in the seafood harvesting and processing sectors varies from year-to-year, but remains relatively stable compared to the fluctuations in the volumes and value of salmon harvested each year. Salmon harvesting employed 1,456 people in Southeast Alaska in 2013, with an additional 1,054 people employed harvesting other fish. A further 1,750 people were employed in fish processing for a combined total of 4,260 jobs, an increase of 360 jobs or 9 percent from the preceding year (Figure 3.22-9). As indicated in Figure 3.22-3, employment in the seafood harvesting and processing sectors is highly seasonal.

Figure 3.22-9
Seafood Harvesting and Fish Processing Employment in Southeast Alaska, 2000 to 2013



Note:
1/ Other seafood harvesting includes crab, groundfish, halibut, herring, shellfish, and sablefish.
Source: Alaska DOL 2014f, 2015b; Warren 2014

Unlike other basic sectors of Southeast Alaska's economy, components of the seafood industry are spread throughout the region with an important presence in virtually every community. Seafood processing workers, for example, were employed in all of the boroughs in 2012, ranging from 14 workers in Skagway to 1,041 workers in Ketchikan Gateway Borough (Table 3.22-11). The commercial fishing and seafood processing industries are generally characterized by high degrees of nonresident participation. As noted above in the *Nonresident and Seasonal Employment* subsection, information on the nonresident share of employment in the fish harvesting sector is not available for Southeast Alaska. Statewide, ADOL estimates that nonresidents accounted for an estimated 51.3 percent of the fish harvesting workforce in 2013 (Krieger et al. 2015).

Nonresidents accounted for approximately 67 percent of employment in the fish processing sector in Southeast Alaska in 2012, ranging from 35.7 percent of workers in Skagway to 90.3 percent in Haines Borough (Table 3.22-12). Local processing workers defined as those who claimed residency in the same borough as the employer comprised 27.1 percent of the processing workforce in 2012 (Alaska DOL 2014f).

Table 3.22-12
Seafood Processing Workforce by Borough, 2012

Borough	Processing Workers	Percent of Workers Nonresident
Haines Borough	257	90.3
Hoonah-Angoon Census Area	41	36.6
Juneau City and Borough	549	64.5
Ketchikan Gateway Borough	1,041	75.8
Petersburg Census Area	683	63.3
Prince of Wales-Hyder Census Area	471	53.9
Sitka City and Borough	769	63.3
Skagway Municipality	14	35.7
Wrangell City and Borough	260	69.2
Yakutat City and Borough	80	42.5
Southeast Total[1/]	**4,106**	**67.0**

Notes:
[1] Workers were counted by place of work. Some workers worked in more than one borough or census area in 2012, but were only counted once in the regional total. As a result, the number of workers by borough and census total do not sum to the total shown here.
Source: Alaska DOL 2014e

In addition to high seasonality and low resident hire, the seafood processing sector is generally characterized by low hourly wages with a median annual wage of $24,689 in 2013 (Strong 2014). The industry does, however, have a number of higher paid occupations, including ship engineers, captains, mates, boat pilots, and general and operations mangers, which accounted for just 1.2 percent total employment, but 6 percent of wages, with a median annual wage of $66,720 (Strong 2014).

Mining and Mineral Development

Mineral exploration and mining have been a part of life in Southeast Alaska for more than a century. Data compiled by the U.S. Bureau of Economic Analysis for 2013 indicated that at least 649 workers were directly employed by the mining industry (Table 3.22-2). This may, however, underestimate total direct employment in the mining industry in Southeast Alaska because data were withheld for the mining sector for several of the boroughs that comprise the region.

Separate estimates developed using Alaska DOL data found that a total of 756 workers were employed in the mining sector in Southeast Alaska in 2013 (Southeast Conference 2014). According to a recent economic impact study prepared for Alaska's mining industry, the Greens Creek and Kensington mines employed 390 workers and 300 workers in 2012, respectively (McDowell Group 2013a). Average annual wages in the mining sector were $98,000 in 2011, with these high wages reflecting the skilled nature of the job, as well as the demands of working in remote locations (Abrahamson 2013).

According to Southeast Conference (2014), employment in the mining sector in Southeast Alaska has more than doubled over the past decade, increasing from 291 jobs in 2003 to a peak of 815 jobs in 2012, before dropping to 756 jobs in 2013. Much of this increase was due to the opening of the Kensington Mine, which began operations in 2010. The region's mining industry is closely tied to global metal prices, which peaked in 2011 after 11 years of growth, and have since declined. Despite falling metal prices, production was higher in 2013 than the preceding year in both of the region's large mines (Greens Creek and Kensington) (Southeast Conference 2014).

The nonresident share of mining employment in Alaska has increased along with overall employment, with 35 percent of mine employees identified as nonresidents in 2011 (Abrahamson 2013). Both the Greens Creek and Kensington mines are located in the City and Borough of Juneau. Greens Creek Mine is located on Admiralty Island; Kensington Mine is located on the mainland approximately 45 miles north of Juneau. Alaska resident employees of both mines live throughout the region. About two-thirds of Greens Creek employees live in Juneau. The other one-third live in other Southeast Alaska communities or elsewhere in the region (McDowell Group 2012b).

Two proposed underground mine projects on Prince of Wales Island received approval for financial assistance through the Alaska Industrial Development and Export Authority in June 2014 (Bradner 2014). Senate Bill 99 authorized $145 million and $125 million in infrastructure and construction financing, respectively, for the proposed Bokan Mountain and Niblack projects.

The Bokan Mountain project is a rare earths mine that would include on-site ore processing facilities. The McDowell Group (2013b) in a study prepared for the Bokan Mountain project estimated that construction of the project would last 2 years and employ an average construction workforce of 200, with peak employment potentially reaching 300 workers. Operation would be expected to employ 190 workers with approximately $18 million in annual payroll (McDowell Group 2013b). The Niblack Project is a proposed underground copper-gold-zinc-silver mine. The project owners estimate that the construction and operation phases of the project would both employ approximately 200 workers (Niblack Project LLC 2015).

Natural Amenities and Quality of Life

Natural amenities and local quality of life have been recognized as important factors determining the economic prospects of many rural communities in the American West and elsewhere (Rudzitis and Johnson 2000). While local amenities and life quality do not directly generate income in the same sense as, say, a sawmill or tourist lodge, they do act to attract and keep residents. This, in turn, supports communities and their economies in several ways. First, many of these residents may earn a substantial proportion of their income from non-job related sources that are independent of local economic activity. Much of this income will then be spent locally, resulting in additional employment and income in the community. Second, residents bring with them important skills and energy that constitute valuable assets for the community. Broadly termed "human capital" by economists, these skills (and the energy with which residents apply them) can earn additional outside income as well as provide essential social resources to the community. These residents may also help attract and retain businesses that are dependent on a skilled labor force, but otherwise relatively footloose from a location standpoint.

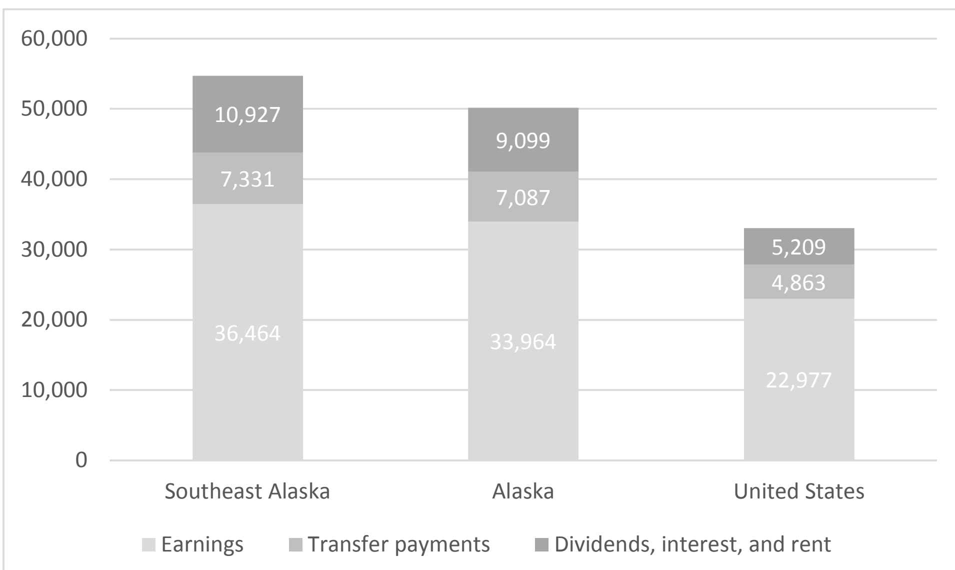
Since it is tracked as a separate category in standard income statistics, non-wage income and its contribution to local economies is directly measurable. Investment income (dividends, interest, and rent) and transfer payments from government are the two major categories of non-wage income. Non-job related income (i.e., transfer payments and dividends, interest, and rent) accounted for 33 percent of total income in Southeast Alaska in 2013, 32 percent statewide, and 36 percent for the United States as a whole (Table 3.22-13; Figure 3.22-10).

Table 3.22-13
Components of Per Capita Income 2013

	Southeast Alaska		Alaska		United States	
Per Capita Income	Total ($)	Percent of Total	Total ($)	Percent of Total	Total ($)	Percent of Total
Total	54,722	100	50,150	100	44,765	100
Earnings[1]	36,464	67	33,964	68	22,977	64
Transfer payments[2]	7,331	13	7,087	14	4,863	17
Dividends, interest, and rent	10,927	20	9,099	18	5,209	19

Notes:
[1] Earnings includes wages and salaries, other labor income, and proprietors' income.
[2] Transfer payments consist mainly of government payments to individuals, including retirement, disability, and unemployment insurance benefit payments, income maintenance payments, and veterans benefit payments. Government payments to individuals in Alaska include Alaska Permanent Fund benefits, which are derived from oil revenues and paid to every resident.
Source: U.S. Bureau of Economic Analysis 2014a

Figure 3.22-10
Components of Per Capita Income 2013



Source: U.S. Department of Commerce, Bureau of Economic Analysis 2014a

Transfer payments consist mainly of government payments to individuals, with social security payments and medical benefits being among the most important (Table 3.22-14). Transfer payments per capita in 2013 comprised a smaller share of total income in Southeast Alaska and Alaska than they did in the U.S. as a whole (Table 3.22-12). Per capita transfer payments were, however, higher in absolute terms in Southeast Alaska and Alaska than the U.S., and this was also the case with dividends, interest, and rent (Table 3.22-14; Figure 3.22-10).

Compared to the U.S. as a whole, retirement and disability and medical components comprised a smaller share of total transfer payments in Southeast Alaska, and still smaller shares of the state as a whole (Table 3.22-14). The “other payments” category, which includes Alaska Permanent Fund dividend payments, in contrast, comprised a much larger share of transfer payments in Alaska, accounting for 11 percent of total transfer payments in Southeast Alaska and the state as a whole compared to less than 1 percent nationwide (Table 3.22-14).

Table 3.22-14
Components of Per Capita Transfer Payments, 2013

	Southeast Alaska		Alaska		USA	
	Total ($)	Percent of Total	Total ($)	Percent of Total	Total ($)	Percent of Total
Retirement and disability	1,985	27%	1,608	23%	1,678	35%
Medical payments	2,829	39%	2,624	37%	2,096	43%
Income maintenance benefits	964	13%	1,124	16%	539	11%
Unemployment insurance	285	4%	267	4%	126	3%
Other payments[1]	793	11%	782	11%	7	0%
Miscellaneous other[2]	475	6%	682	10%	415	9%
Total transfer payments	**7,331**	**100%**	**7,087**	**100%**	**4,863**	**100%**

Notes:
[1] Consists largely of Bureau of Indian Affairs payments, education exchange payments, Alaska Permanent Fund dividend payments, compensation of survivors of public safety officers, compensation of victims of crime, disaster relief payments, compensation for Japanese internment, and other special payments to individuals.
[2] Miscellaneous other includes veterans benefit payments, Federal education and training assistant payments (excluding veterans), payments to nonprofit institutions, and business payments to individuals.
Source: U.S. Bureau of Economic Analysis 2014b

Retirees comprise the most common source of non-wage income in many rural communities (Colt 2001). In fact, this has given rise in some places to local marketing strategies specifically aimed at attracting retirees and thereby developing the local “retirement industry.” The growing economic importance of retirees was not readily apparent in Southeast Alaska in Tables 3.22-13 and 3.22-14 because the relatively large size of the “other payments” category tends to overshadow the other categories. However, although retirement and disability payments and medical payments comprise a relatively small share of total income by national standards, both increased as a share of transfer payments in Southeast Alaska between 2000 and 2013 accounting for a combined total of 66 percent of transfer payments in 2013 compared to 41 percent in 2000. This is partially the result of natural aging processes, as the median age in Southeast Alaska has continued to increase since 2000, but may also indicate that Alaska is becoming more attractive for people as a place to live and not merely as a place to earn money.

Although it is difficult to directly measure the importance of natural amenities in attracting and keeping residents, proximity to natural environments and the recreational activities they support are undeniably a benefit enjoyed by residents, especially in the more rural communities of Southeast Alaska. At the same time, the atmosphere of a community also constitutes an important amenity, and this may often be linked to more traditional forms of economic activity, such as fishing or timber. In other words, changes in the local economy such as a shift to tourism may impact local atmosphere and amenities even if the surrounding natural environment remains essentially unchanged. These impacts are often assumed to be negative as tourism leads to crowding and the loss of traditional charm, but this need not always be the case. Certain tourism establishments, such as restaurants, meeting centers, or entertainment facilities, may often serve local residents as well, thus adding to the amenities available to them. Finally, the size of a community also has important effects on the local amenities available. If a community is too small, or too poor, it cannot provide many of the basic social and economic amenities many residents require, local natural amenities notwithstanding.

Environmental Consequences

This section describes the potential direct, indirect, and cumulative economic and social effects of the five alternatives examined in detail in the EIS.

Direct and Indirect Effects

Wood Products

The Secretary of Agriculture directed the Forest Service in Memorandum 1044-009 (July 2013) to transition to a young-growth-based timber management program on the Tongass National Forest over the next 10 to 15 years, so that at the end of this period the vast majority of timber sold by the Tongass will be young growth. The Secretary's memorandum indicates that this transition should be implemented in a manner that preserves a viable timber industry that provides jobs and opportunities for Southeast Alaska residents.

Comments received during public scoping were concerned that a premature transition to young growth would result in mill closures because it would not allow existing mills sufficient time to retool so that they can process young-growth logs. Commenters stated that if existing mills were to close, it would not be possible to maintain the economies of scale and infrastructure necessary to support a viable timber industry. Other comments emphasized that the transition should support local jobs through local, value-added manufacturing, and end existing export policies on the Tongass that allow unprocessed logs to be exported.

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Using methods adapted from previous PNW Research Station analyses (Brooks and Haynes 1990, 1994, 1997; Brackley et al. 2006a, 2006b), the PNW Research Station developed a baseline projection of annual demand for Tongass timber for 2015 to 2030 (Daniels 2015). This baseline projection anticipates that demand would gradually increase from an estimated 40.0 MMBF in 2015 to 52.1 MMBF in 2030 (Table 3.22-10; Figure 3.22-8). All five alternatives evaluated in this EIS were designed to correspond with these current demand projections and produce a projected timber sale quantity (PTSQ) of 46 MMBF per year during the short term. The PTSQ would consist of old-growth and young-growth harvest, with old growth decreasing as a share of this total volume (46 MMBF) over time as more young growth becomes economic to harvest. Old-growth volume would continue to decrease until it reaches 5 MMBF per year, at which point it would be stabilized at 5 MMBF per year to support a small sale and micro sale industry, and would remain at that level for the remainder of the planning period.[6] Once this point is reached, the PTSQ would be allowed to increase above 46 MMBF as more young growth becomes economic to harvest. The speed of the transition (i.e., how many years it would take for the young-growth supply to reach 41 MMBF) and the amount of young-growth timber available following the transition would vary by alternative.

Estimated Tongass timber supply, assuming maximum harvest levels, is presented by alternative for Years 1 to 100 in Table 3.22-15. Estimated volumes are expressed as average annual volumes in 5-year increments. This table shows how many 5-year periods it would take for average annual young-growth harvest to reach 41 MMBF. The shaded cells indicate the 5-year increment when the transition to young-growth harvest is expected to be completed. Table 3.22-15 also shows the amount of young-growth timber that would be available following the transition.

Maximum young-growth harvest is shown graphically by alternative for the 100-year study period in 5-year increments in Figure 3.22-11. The available volume would increase over time under all of the alternatives with the highest available volumes, once they are reached, expected to remain constant and extend over several decades (Figure 3.22-11).

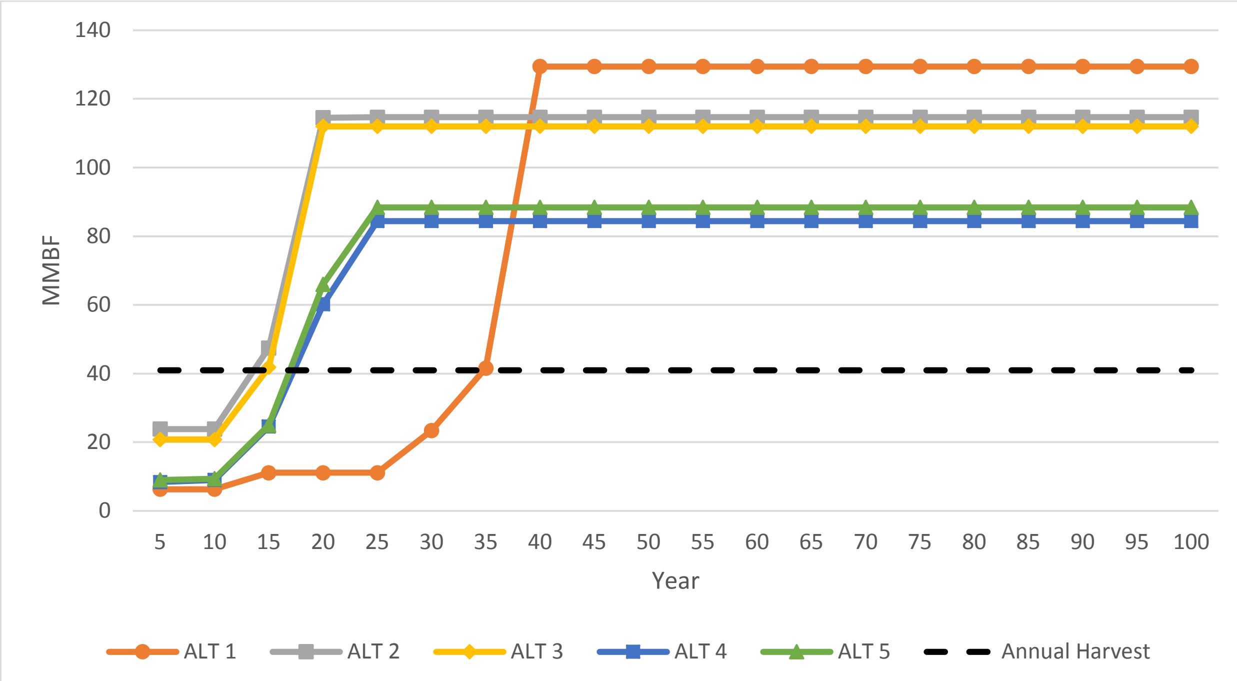
[6] The sawmills that comprise the small sale and micro sale industry tend to process larger logs and produce high value products such as appearance-grade lumber and cedar shingles. These mills together would continue to process up to 5 MMBF of old-growth timber following the transition.

Table 3.22-15
Estimated Maximum Timber Harvest on the Tongass by Alternative, Year 1 to 100

5-Year		Alternative 1			Alternative 2			Alternative 3			Alternative 4			Alternative 5		
Period	Years	YG	OG	Total	YG	OG	Total	YG	OG	Total	YG	OG	Total	YG	OG	Total
1	1-5	6.3	39.7	46.0	23.8	22.2	46.0	20.8	25.2	46.0	8.4	37.6	46.0	9.0	37.0	46.0
2	6-10	6.3	39.7	46.0	23.8	22.2	46.0	20.8	25.2	46.0	9.0	37.0	46.0	9.4	36.6	46.0
3	11-15	11.1	34.9	46.0	47.5	5.0	52.5	41.8	5.0	46.0	24.6	21.4	46.0	25.0	21.0	46.0
4	16-20	11.1	34.9	46.0	114.5	5.0	119.5	112.0	5.0	117.0	60.2	5.0	65.2	66.0	5.0	71.0
5	21-25	11.1	34.9	46.0	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
6	26-30	23.4	22.6	46.0	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
7	31-35	41.6	5.0	46.6	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
8	36-40	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
9	41-45	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
10	46-50	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
11	51-55	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
12	56-60	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
13	61-65	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
14	66-70	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
15	71-75	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
16	76-80	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
17	81-85	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
18	86-90	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
19	91-95	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4
20	96-100	129.4	5.0	134.4	114.6	5.0	119.6	112.0	5.0	117.0	84.4	5.0	89.4	88.4	5.0	93.4

Notes:
YG = young growth OG = old growth
[1] The shaded cells indicate the 5-year increment when the transition to young-growth harvest is expected to be completed.
[2] These volumes are maximum harvest levels and include grade 1, 2, and 3 logs only.

Figure 3.22-11
Estimated Maximum Young-Growth Timber Harvest on the Tongass by Alternative, Year 1 to 100



Note:
1/ The annual harvest level shown is 41 MMBF, the point at which the transition to young-growth harvest is expected to be completed.

Demand Indicators

Pacific Northwest Research Station Projections
The Affected Environment part of this section provides an overview of current conditions for the Southeast Alaska wood products industry and discusses projected demand, as identified by Daniels (2015). Projections were developed for 2015 to 2030 for a Baseline Model that was then used to evaluate three potential scenarios representing different potential futures for timber harvest in Southeast Alaska (see Table 3.22-9 and Figure 3.22-8). These scenarios provide a basis for discussion of where the industry currently is, and provide insight into what that industry could look like in the future given various assumptions about industry investment and end markets.

Baseline Model
The Baseline Model developed by Daniels (2015) projected demand for Tongass timber assuming that historical trends in imports, consumption, and market share will remain constant. Total derived demand for timber harvested on the Tongass was projected to gradually increase from 40.0 MMBF in 2015 to 52.1 MMBF in 2030. All five alternatives were designed to correspond with these projections and supply 46 MMBF per year until the young-growth transition occurs (Table 3.22-15).

Alternatives 1, 4, and 5. The young-growth transition is expected to occur in Years 31 through 35 for Alternative 1 and Years 16 through 20 for Alternatives 4 and 5 (Table 3.22-15). Although the relative share of total harvest made up by young growth would increase under these alternatives from 2015 through 2030

(Years 1 through 15), the PNW Research Station modeling suggests that projected harvest volumes under these alternatives would have sufficient old-growth volume to meet market demand as projected in the PNW Research Station's Baseline Model.

Alternatives 2 and 3. Under these alternatives, the young-growth transition is expected to occur in Years 10 through 15 (Table 3.22-15). This generally approximates the young-growth transition period of 10 years employed in the PNW Research Station analyses for Scenarios 1 through 3. These three scenarios are all based on the assumption that the young-growth transition would occur in 2025 (Year 10) and are more representative of Alternatives 2 and 3 than the Baseline Model.

Scenario 1
This scenario assumes that the young-growth transition would occur by 2025, with the transition expected to result in a reduction in Pacific Rim demand for lumber that would in turn cause a decline in harvest from the Tongass relative to the baseline rate (Table 3.22-10; Figure 3.22-8).

Alternatives 1, 4, and 5. The young-growth transition is expected to occur later than 2025 under these alternatives. As a result, the projected reduction in Pacific Rim demand anticipated following a transition in 2025 would not be expected occur under these alternatives. The Baseline Model projections developed by the PNW Research Station are more representative of the modeled period (2015 to 2030; Years 1 to 15) for Alternatives 1, 4, and 5.

Alternatives 2 and 3. Under these alternatives, the young-growth transition would occur in Years 10 through 15, which generally approximates to the timeframe (2015) assumed for this scenario. As a result, Scenario 1 is more representative of Alternatives 2 and 3 than the Baseline Model and represents one alternative future for timber harvest under these alternatives.

Scenario 2
Scenario 2 builds upon Scenario 1 by adding markets for wood energy products based on the assumption that 30 percent of existing heating fuel use in Southeast Alaska would be replaced by wood based fuel over time (Table 3.22-10; Figure 3.22-8). Daniels (2015) assumed an annual conversion rate of 5 percent starting in 2016 for the purposes of analysis.

Alternatives 1, 4, and 5. Timber supply would remain at 46 MMBF for the duration of the period modeled by PNW Research Station (2015 to 2030; Years 1 through 15) and, as modeled, these alternatives would be unable to meet increased wood energy-related demand.

Alternatives 2 and 3. Derived demand for Tongass timber under Scenario 2 would start to exceed 46 MMBF prior to the anticipated young-growth transition under these alternatives and demand in excess of 46 MMBF would not be met. Following the transition, total annual harvest for Alternative 2 would be 52.5 MMBF, which would meet a larger share of the anticipated demand under this scenario than the other alternatives, including Alternative 3, but would be equivalent to 69 percent of projected demand in 2030. While Scenario 2 represents an alternative future for timber harvest under Alternatives 2 and 3, as currently configured (with old-growth harvest constrained to 5 MMBF), neither of these alternatives would be able to fully meet the total demand projected under Scenario 2.

It may, however, be noted that the total amount available for harvest after 2030 (Years 16-20) under Alternatives 2 and 3 would increase dramatically as additional young-growth timber becomes available for harvest and would be about equivalent to 1.5 times the projected demand for 2030 under this scenario.

Scenario 3
Scenario 3 differs from Scenario 1 by using a different rate of projected growth for domestic lumber consumption based on the growth rate prior to the 2007-2009 recession, rather than the more conservative (post-recession) growth rate employed in the Baseline Model and Scenarios 1 and 2 (Table 3.22-10; Figure 3.22-8).

Alternatives 1, 4, and 5. The young-growth transition would not occur during the period modeled by the PNW Research Station under these alternatives and the amount of timber available to be harvested would be limited to 46 MMBF per year. Without the transition, there would be no drop in demand from the Pacific Rim markets, and any additional demand associated with increased domestic lumber consumption would go unmet.

Alternatives 2 and 3. Scenario 3 is more representative of Alternatives 2 and 3 than the Baseline Model and, like Scenarios 1 and 2, represents one alternative future for timber harvest under these alternatives. Projected harvest under Alternatives 2 and 3 following the transition would be sufficient to meet projected demand for this scenario.

Summary
As presently configured, Alternatives 1, 4, and 5 most closely correspond with the Baseline Model developed by the PNW Research Station. Because total supply is capped at 46 MMBF until the young-growth transition, these alternatives would not be able to meet potential increases in demand like those assumed for Scenarios 2 and 3 (increased wood energy and domestic demand, respectively) were they to occur independent of the young-growth transition.

Under Alternatives 2 and 3, the young-growth transition would occur in Years 10 through 15, which generally approximates the young-growth transition period of 10 years assumed in Scenarios 1 through 3 modeled by the PNW Research Station. Scenarios 1 and 3 represent alternative futures for the 2015 to 2030 timeframe that could be potentially realized under these alternatives. Projected demand under Scenario 2 would exceed available supply under both of these alternatives as currently configured.

Other Demand Indicators
The relative speed of the transition (i.e., the number of years it would take the young growth supply to reach 41 MMBF) would affect the amount of time available for existing mills to retool or modify existing operations to adapt to the changing supply of timber. It would also affect the amount of time available for existing mills and other potential operators to evaluate markets for young-growth timber and wood products harvested and produced in Southeast Alaska. For existing mills, this timeframe would also be affected by the existing volume under contract. Existing volume under contract does not vary by alternative, but would influence the adjustment period in all cases. As discussed in the Affected Environment section, above, various purchasers had an estimated total of 114.5 MMBF of uncut timber under contract with the Forest Service in July 2015, with Viking Lumber accounting for more than half (57 percent; 64.6 MMBF) of this total (USDA Forest Service 2015c).

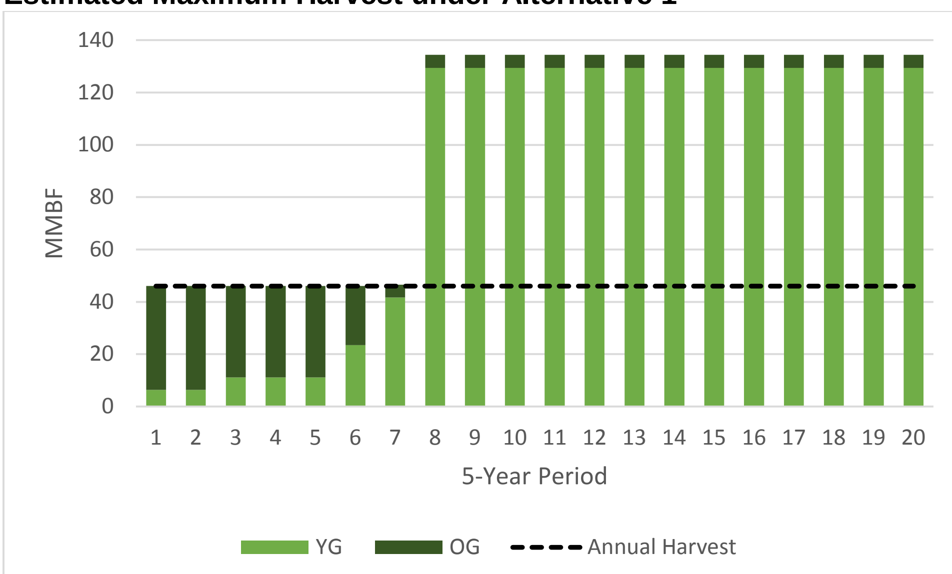
Following the transition, the timber industry in Southeast Alaska would be primarily oriented toward young growth. The form this industry might take would be potentially influenced by a range of factors, including industry investment and end markets. The potential supply of timber from the Tongass National Forest will also play an important role in shaping the future industry. An economically viable and stable young-growth timber supply is expected to be available in the long-term under all five alternatives, but annual estimated volumes would vary by alternative. An annual old-growth volume of 5 MMBF would be available to support a limited small operator industry under all alternatives for the 100-year study period.

Alternative 1

Under this alternative, an estimated annual average of 6.3 MMBF of young growth would be available in Years 1 through 10, increasing to 11.1 MMBF in Years 11 through 25, and 23.4 MMBF in Years 26 through 30, with available young growth expected to exceed 41 MMBF in Years 31 through 35 (Table 3.22-15). The transition to young growth would be the slowest under this alternative occurring 15 years later than it would under Alternatives 4 and 5, and 20 years later than under Alternatives 2 and 3 (Figure 3.22-12). The continued availability of old-growth timber under this alternative would allow a period of several decades for the existing industry to retool or new facilities to develop and come online.

The relatively limited volumes of young growth available during the 25 years following implementation would be sufficient to supply all or part of the estimated annual demand of Viking Lumber's small log line (8 MMBF). Smaller volumes of material may also be available for bioenergy uses, but potential investment in new facilities designed to process young-growth material would be unlikely to occur until larger volumes became available after year 30.

Figure 3.22-12
Estimated Maximum Harvest under Alternative 1



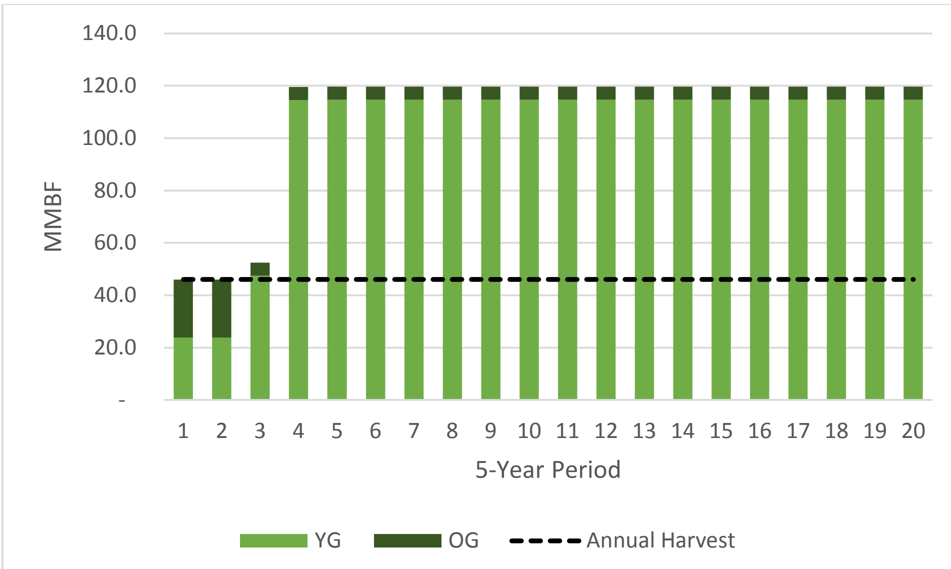
Once the transition is finally reached, the volume of young-growth harvest available for harvest rapidly increases, jumping from an annual average of 41.6 MMBF for Years 31 through 35 to 129.4 MMBF in the next 5-year period and for the remainder of the study period, through Year 100 (Figure 3.22-12). The final annual available young-growth volume (129.4 MMBF) would be the highest under this alternative, but would be available for fewer years than the highest volumes under the other alternatives.

Alternative 2

Under this alternative, an estimated annual average of 23.8 MMBF of young growth would be available in Years 1 through 10, the highest amount under any of the alternatives, with available young growth expected to exceed 41 MMBF as soon as Years 11-15, and available annual young-growth volume increasing to the maximum amount under this alternative (114.5 MMBF) in Years 16-20 (Table 3.22-14; Figure 3.22-13). The transition to young growth would be quickest under this alternative and Alternative 3, and the final annual available young-growth volume (114.5 MMBF) would be second highest under this alternative.

The young-growth volumes initially available in Years 1 through 10 (23.8 MMBF) would be sufficient to supply all or part of the estimated annual demand of Viking Lumber's small log line (8 MMBF), as well as increased demand if the existing facility was modified. There would also be sufficient supply to support bioenergy uses. Following the transition in Years 11-15, sufficient volume would be available to supply additional demand from sawmills, as well as bioenergy uses.

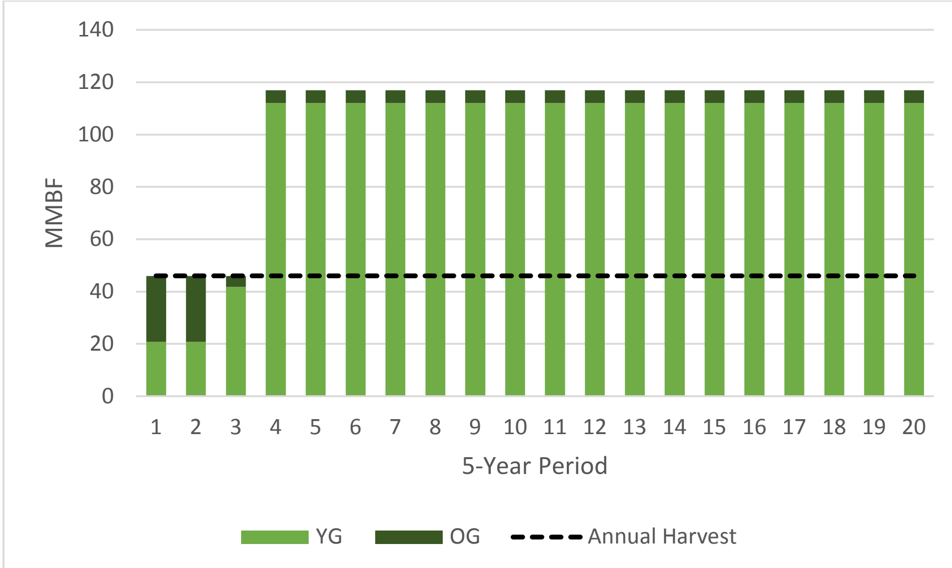
Figure 3.22-13
Estimated Maximum Harvest under Alternative 2



Alternative 3

Under this alternative, an estimated annual average of 20.8 MMBF of young growth would be available in Years 1 through 10, the second highest amount under any of the alternatives, with available young growth expected to exceed 41 MMBF as soon as Years 11-15, and available annual young-growth volume increasing to the maximum amount under this alternative (112.0 MMBF) in Years 16-20 (Table 3.22-14; Figure 3.22-14). The timing and available volumes under this alternative are very similar to those estimated for Alternative 2. The transition to young growth would be quickest under Alternatives 2 and 3, and the final annual available young-growth volume (112.0 MMBF) would be third highest under this alternative, just slightly lower than the volume available under Alternative 2.

Figure 3.22-14
Estimated Maximum Harvest under Alternative 3

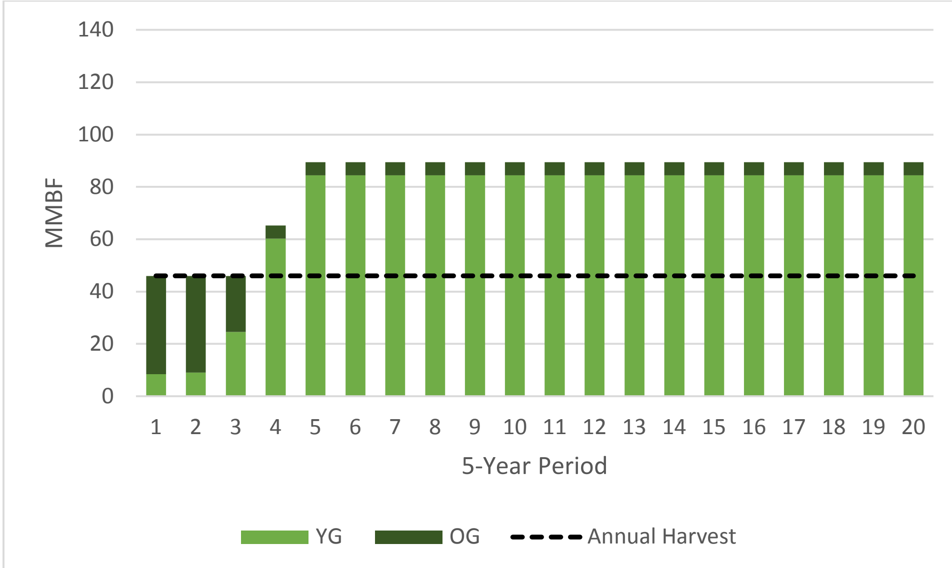


Alternative 4

Under this alternative, an estimated annual average of 8.4 MMBF of young growth would be available in Years 1-5, increasing slightly to 9.0 MMBF for Years 6-10, and then 24.6 MMBF in Years 11-15. Available young growth is expected to exceed 41 MMBF in Years 16-20, with the available annual young-growth volume increasing to the maximum amount under this alternative (84.4 MMBF) in Years 21-25 (Table 3.22-14; Figure 3.22-15). The transition to young growth would be slower than Alternatives 2 and 3 under this alternative, but still 15 years ahead of Alternative 1. The final available young-growth volume (84.4 MMBF) would be the lowest under this alternative.

The young-growth volumes initially available in Years 1 through 10 (8.4 to 9.0 MMBF) would be sufficient to supply all or part of the estimated annual demand of Viking Lumber's small log line (8 MMBF). Increased supply in Years 11-16 would be sufficient to support increased demand from Viking Lumber were the facility to be modified, as well as additional bioenergy uses. Following the transition in Years 11-15, sufficient volume would be available to supply additional demand from sawmills, as well as bioenergy uses.

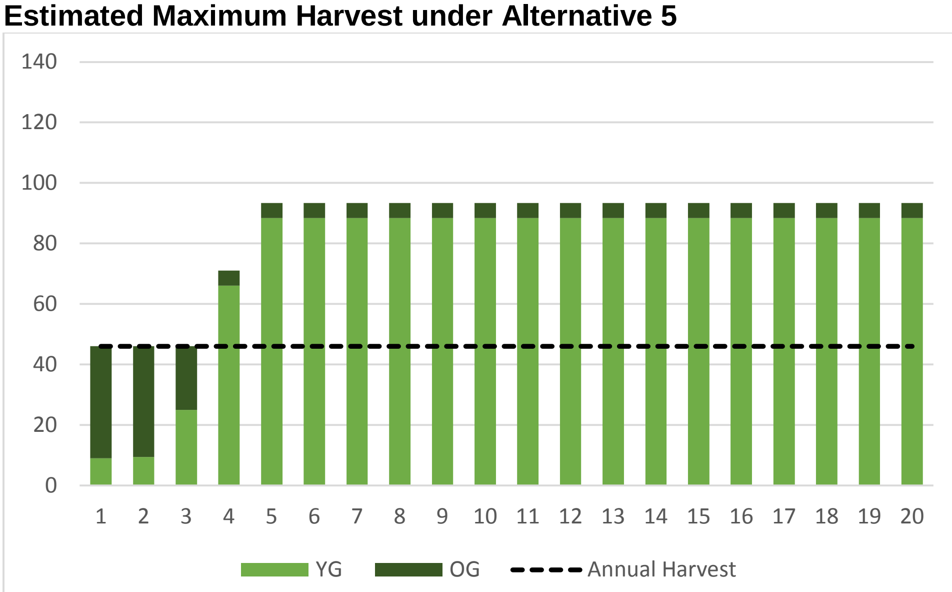
Figure 3.22-15
Estimated Maximum Harvest under Alternative 4



Alternative 5

The timing and available volumes under this alternative are very similar and slightly higher than those estimated for Alternative 4. Under this alternative, an estimated annual average of 9.0 MMBF of young growth would be available in Years 1-5, increasing slightly to 9.4 MMBF for Years 6-10, and then 25.0 MMBF in Years 11-15. Available young growth is expected to exceed 41 MMBF in Years 16-20, with the available annual young-growth volume increasing to the maximum amount under this alternative (88.4 MMBF) in Years 21-25 (Table 3.22-14; Figure 3.22-16). The transition to young growth would be slower than Alternatives 2 and 3 under this alternative, but still 15 years ahead of Alternative 1. The final available young-growth volume (88.4 MMBF) would be the lowest under this alternative.

Figure 3.22-16
Estimated Maximum Harvest under Alternative 5



Financial Analysis

Total discounted net revenues are presented for each alternative for two time periods – 25 years and 100 years – in Table 3.22-16. These estimates developed as part of the Woodstock model analysis are the sum of annual values expressed in current dollars using a 4 percent discount rate. Annual values are estimated pond log values that were developed using Forest Service Region 10 appraisal rates for different species and log grades. Pond log values are the price a buyer would pay for a log at the mill site (selling value minus manufacturing costs). Logging and transportation costs and an amount for normal profit and risk are also factored into this value. These pond log values represent the value to the purchaser and are net of Forest Service costs that would be incurred for National Environmental Policy Act (NEPA) preparation, sale preparation and administration, and engineering support.

Table 3.22-16
Discounted Net Revenues by Alternative for 25 and 100 Years

Alternative	Years 1-25	Years 1-100
1	$204.1	$321.9
2	$95.3	$408.6
3	$45.1	$106.8
4	$116.1	$175.3
5	$112.9	$173.6

Note:
[1] Discounted net revenues are presented in $ million

The Woodstock model analysis that generated the values shown in Table 3.22-16 involved first maximizing young-growth harvest under a non-declining even flow and then adding old-growth volume to reach the PTSQ of 46 MMBF and maximizing the net present value. Modeling assumed that all western redcedar is processed domestically and that all Alaska yellow-cedar is sent to markets outside of Alaska. Western hemlock and Sitka spruce volumes and other species were assumed for the purpose of this analysis to be divided equally between domestic production and export in accordance with the current limited export shipment policy. The limited export shipment policy is discussed in the Affected Environment portion of this section (see the R10 Limited Export Shipment Policy subsection, above). The Woodstock model analysis developed for this Forest Plan amendment is discussed in detail in Appendix B to this EIS.

Viewed over 25-year and 100-year planning horizons, all five alternatives resulted in positive net revenues. Discounted net revenues for the 25-year period range from $45 million (Alternative 3) to $204.1 million (Alternative 1) (Table 3.22-16). Net revenues were estimated for 5-year increments and all of the alternatives, with the exception of Alternative 1, had 5-year periods where net revenues would be negative (Table 3.22-17). Positive values for the 5-year increments that comprise years 1 to 25 are in most cases due to the old-growth component of projected harvest. The old-growth component generates net positive revenue for all alternatives and 5-year increments over the 25-year planning horizon (Figure 3.22-17). In contrast, in most cases net revenues generated by the young-growth component are negative (Figure 3.22-18).

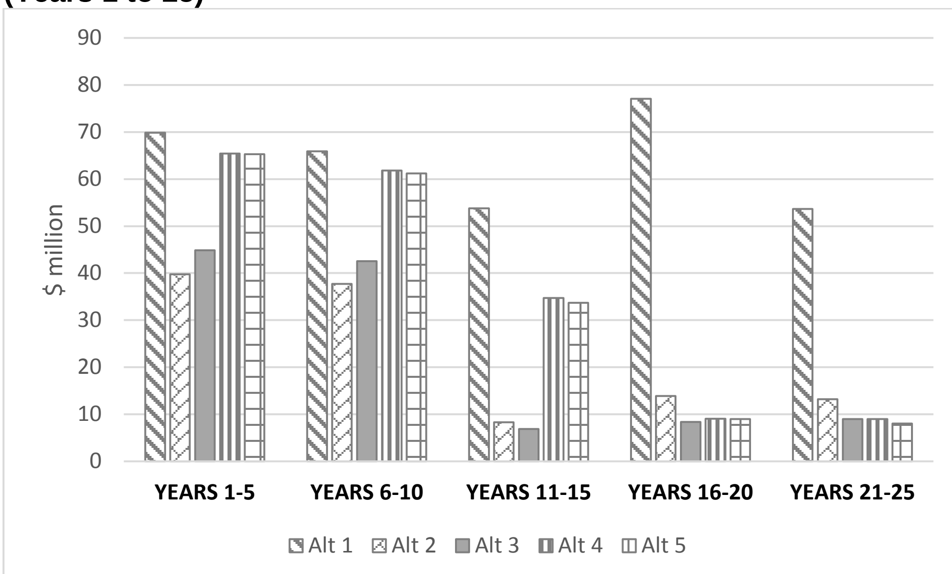
This programmatic analysis suggests that individual timber sales offered under any of the alternatives in the first 25 years of the planning period will likely need to include a mix of old growth and young growth to appraise positive as required by Public Law 112-74, House Report 2055-257, Section 414.

Table 3.22-17
Discounted Net Revenues by Alternative for 5-Year Increments (Years 1 to 25)

	Years				
Alternative	**1-5**	**6-10**	**11-15**	**16-20**	**21-25**
1	$62.4	$46.9	$30.5	$42.4	$21.9
2	$189.3	$110.3	-$48.3	-$125.7	-$30.2
3	$41.0	$27.1	-$5.8	-$17.5	$0.3
4	$57.4	$42.7	$15.8	-$2.2	$2.5
5	$56.1	$42.1	$15.7	-$5.1	$4.0

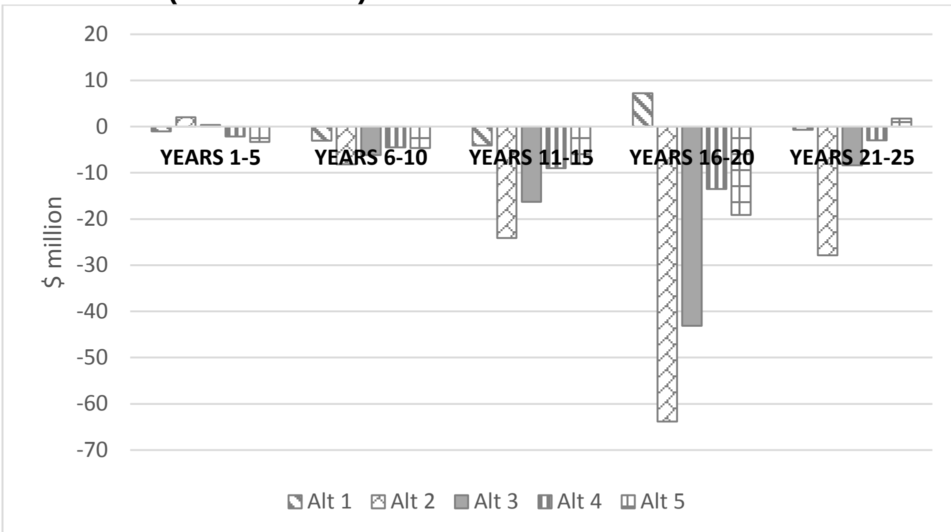
Note:
[1] Discounted net revenues are presented in $ million

Figure 3.22-17
Net Revenues for Old Growth by Alternative for 5-Year Increments (Years 1 to 25)



Note: Values shown are 5-year totals and are not discounted.

Figure 3.22-18
Net Revenues for Young Growth by Alternative for 5-Year Increments (Years 1 to 25)



Note: Values shown are 5-year totals and are not discounted.

Over time, the young-growth component also generates positive revenues under all alternatives, which is reflected in the discounted net revenues presented for the 100 year planning horizon in Table 3.22-16. Discounted net revenues for the 100-year period range from $106.8 million (Alternative 3) to $408.6 million (Alternative 2) (Table 3.22-16).

Employment and Income

Projected levels of annual employment and income are presented by alternative in Table 3.22-18. These estimates are based on the maximum annual average harvest that could occur over the first decade following implementation (Years 1 to 10). All five alternatives are based on an annual PTSQ of 46 MMBF, with the proportion of the total that is made up of young growth increasing over time, and the share made up of old growth decreasing. The ratio of young growth to old growth varies by alternative and over time in the years prior to the transition to young growth (defined as the time that the young-growth supply reaches 41 MMBF). The young-growth volumes presented in Table 3.22-15 consist of sawlogs only. Based on the average composition of past harvest on the Tongass, the old-growth volume is assumed to consist of 15 percent utility volume (USDA Forest Service 2008a). The average composition by species would also vary by harvest type (old growth versus young growth), with Alaska yellow-cedar and Western redcedar making up a larger share of old-growth volume. The differences between old-growth and young-growth volumes and their relative shares by alternative are reflected in the employment and income estimates presented in Table 3.22-18.

Table 3.22-18
Estimated Timber Industry Employment and Income by Alternative (First Decade, Annual Average)

Volume/Jobs/Income	Alternative 1	2	3	4	5
Total Sawlog Volume (MMBF)[1]	40.0	42.7	42.2	40.4	40.5
Utility Volume (MMBF)[2]	6.0	3.3	3.8	5.6	5.5
Jobs Related to Logging[3]	91	96	95	91	91
Jobs Related to Sawmilling[3,4]	54-98	57-109	57-107	54-100	54-100
Jobs Related to Transportation and other Services[3,4,5]	28-43	28-46	28-45	28-43	28-44
Total Direct Jobs	**187-217**	**200-234**	**197-231**	**189-219**	**189-219**
Direct Income ($ million)[6]	9.7-10.2	10.3-11.0	10.2-10.8	9.8-10.3	9.8-10.4

Notes:
[1] Total sawlog volume is the estimated sawlog component of the PTSQ (46 MMBF) based on the projected young growth and old growth volumes identified in Table 3.22-14. Total volumes vary based on the relative share of old-growth timber.
[2] Assumes that 15 percent of old-growth harvest consists of utility volume. Young-growth volumes are expressed in sawlogs and do not include logging residues and other biomass.
[3] Employment and income by alternative are estimated based on employment coefficients from 2007 to 2010 (Alexander 2012).
[4] Local sawmilling and transportation-related employment estimates are based on a range, from maximum possible shipment out of state (export of all Alaska yellow cedar plus hemlock and Sitka spruce export equal to 50% of total sale net sawlog volume), to no shipment of hemlock and Sitka spruce and export of 100% Alaska yellow cedar.
[5] Transportation and other services include water transportation, independent trucking, stevedoring, scaling, and export marking and sort yard employment for export volume, and water transportation, scaling, and independent trucking for locally sawn volume. Export employs more workers in transportation and other services per MMBF harvested than domestic production. This is reflected in the range of values presented above.
[6] Sawmill and transportation-related income estimates are based on the same assumptions as employment and are presented as a range.

Direct employment and income estimates are presented as a range in Table 3.22-18. These estimates are for employment that would take place in Southeast Alaska. Although estimates of value for timber in the various alternatives are based on maximizing shipments of timber sold out of state (Table 3.22-17), purchasers have the choice to sell as much as they can to other markets as allowed under the limited export policy, or process part or all of the material in local sawmills. Actual employment and income in Southeast Alaska would depend on choices made by purchasers; those choices may change as markets and prices shift. Under current market conditions, purchasers are likely to export as much as they can while processing enough material locally to keep manufacturing facilities open, and take advantage of opportunities to produce high value sawn material in Southeast Alaska.

Jobs are presented in Table 3.22-18 as “annualized” job-years. Annualized jobs are employment estimates adjusted to be based on a full year even though the employment may be seasonal. The resulting employment estimates would not necessarily all occur in one year and estimated job-years do not directly translate into numbers of affected workers. While the employment would not necessarily occur in one year, these are annual estimates, meaning that these levels of employment would be supported each year the estimated timber volumes shown in Table 3.22-17 are harvested.

The job and income estimates presented in Table 3.22-18 are approximate numbers based on average jobs per MMBF ratios that were estimated using harvest and employment data from 2007 to 2010. These numbers allow a comparison of the different alternatives based on total volume harvested. Actual numbers would vary under each alternative as timber offerings are packaged to include some or all of the units, and individual sales targeted for different sized operators are developed. They would also likely vary based on the relative age composition of the offered sale (old growth versus young growth, or more likely, some combination of the two).

Indirect employment effects are not estimated in Table 3.22-18 because, while indirect employment coefficients can be estimated at large scales, they are less useful at small local scales and can be misleading. Indirect effects include jobs and income associated with industries that supply inputs to the harvest and processing sectors, as well as those supported by spending elsewhere in the local economy.

Renewable Energy

All renewable energy development projects built and operated in Southeast Alaska have to meet local, state and, in most cases, federal laws, regulations, and requirements. Projects are also subject to Tongass National Forest Plan standards and guidelines. The Forest Plan identifies three types of area related to energy development on the Tongass based on the existing Land Use Designations (LUDs): windows, which represent areas potentially available for energy development; avoidance areas; and exclusion areas. There are no exclusion areas on the Tongass. Avoidance areas are those LUDs where development of energy projects is not considered desirable. A search for “windows” should be exhausted before facilities are considered in avoidance areas.

These classifications and the standards and guidelines in the current Forest Plan would continue to apply under Alternative 1. Energy projects would be managed under the new Renewable Energy Plan Components identified in Chapter 5 of the amended Forest Plan. These new components would replace the current management approach, and renewable energy projects would be considered on all Forest lands regardless of the LUD. Implementation of the new Renewable Energy Plan Components under Alternatives 2 through 5 could potentially simplify the development process for projects proposed for LUDs that are presently classified as “avoidance areas” and could help facilitate the provision of lower cost electricity to communities that are currently dependent on relatively high cost diesel generation (see the *Renewable Energy* section of this EIS). Potential effects by community are addressed below in the *Communities* section.

Recreation and Tourism

Potential impacts to recreation and tourism are assessed in the *Recreation and Tourism* section of this EIS. Potential impacts are evaluated with respect to Recreation Opportunity Spectrum (ROS) settings, recreation places, and developed recreation facilities. The mix of primitive and roaded recreation opportunities would remain largely unchanged under all alternatives, with most projected harvest expected to occur in ROS settings where some modification of the natural environment is expected. Less than 1 percent of the acres currently allocated to Primitive, Semi-Primitive Non-Motorized, and Semi-Primitive Motorized ROS settings would be harvested after 100 years, assuming the maximum allowable levels of harvest were to occur.

Recreation places are identified in the *Recreation and Tourism* section as areas that are relatively easy to access, primarily areas near communities, protected boat anchorages, boat landings, aircraft landing sites, and road systems, and include approximately 3.6 million acres or 22 percent of the Forest, with some areas being identified as important for more than one type of recreation activity. Recreation places include a range of LUD classifications and timber harvest would occur in areas identified as recreation places under all of the alternatives, with the maximum amount of harvest varying by type of recreation place and alternative. None of the alternatives are expected to result in long-term impacts to recreationists and visitors wishing to use these areas, but may temporarily displace some use.

The *Recreation and Tourism* section also identifies the number of developed recreation facilities within 0.5 mile of suitable old-growth and young-growth acres by alternative, which ranges from 171 for Alternative 4 to 206 for Alternative 1. Areas in relative proximity to timber harvest could be negatively impacted during harvest, but impacts would localized and often limited to the harvest duration. Project-level impacts to facilities and other recreation uses would be assessed as part of separate NEPA processes.

These potential impacts are discussed in more detail in the Recreation and Tourism section. Viewed in terms of recreation and tourism employment over the next decade, there would be very little difference between the alternatives.

Salmon Harvesting and Processing

There is not expected to be any significant change to the commercial fishing or fish processing industries over the planning period as a result of National Forest activities. The future of the fishing industry in Southeast Alaska is more likely to depend upon occurrences outside of the Tongass National Forest such as hatchery production, off-shore harvest levels, and changes in ocean conditions. In addition, a large segment of the commercial fishing industry operates under a limited entry harvest system. New permit holders are not quickly added to the market during high fish harvest years, nor are they removed during periods of low harvest. The result in either case is the same number of commercial fishers catching either more or less fish.

The 1997 FEIS noted that the amount of acreage of timber harvest was at most less than 20,000 acres per year, representing approximately 0.5 percent of the total remaining productive old growth (or 5 percent over the next decade) and less than 0.02 percent of the entire Forest. That EIS concluded that this was not expected to result in a significant change to commercial fishing employment. All of the alternatives that are presently being evaluated in this EIS would allow considerably less timber harvest and new road construction than the alternatives evaluated in the 1997 FEIS. Total annual harvest allowed over the 100 year planning period would range from 2,666 acres (Alternative 4) to 3,605 acres (Alternative 2). These potential levels of harvest, which are substantially lower than the maximum proposed in the 1997 FEIS, when viewed in conjunction with the Riparian Management standards and guidelines established in the current Forest Plan are not expected to have a significant effect on commercial fisheries employment. The current Riparian Management standards and guidelines would remain unchanged under all alternatives,

Natural Amenities and Quality of Life

As discussed in the Affected Environment portion of this section, natural amenities and local quality of life are generally recognized as important factors that serve to attract and retain residents. It is, however, very difficult to determine the effect of the different alternatives on local amenities and, further, on the economic activity that these amenities are believed to indirectly generate. In most cases and localities, the difference between the alternatives with respect to natural amenities is not expected to be significant enough to result in measurable changes in economic activity.

Ecosystem Services

Ecosystem services are the products of functioning ecosystems that often are available without direct costs to people who benefit from them (Kline 2006). These services have been described in a number of different ways including the typology developed by the Millennium Ecosystem Assessment (2005), which is featured on the Forest Service's Ecosystem Services web site (http://www.fs.fed.us/ecosystemservices/) and identifies four general categories of ecosystem services: provisioning, regulating, cultural, and supporting. Provisioning services include wild food, fresh water, and fiber. Regulating services are the benefits obtained from ecosystem impacts on natural processes, such as air quality, climate stabilization, water quality, and erosion. Cultural services include recreation, aesthetic, educational, and spiritual and religious benefits. Supporting services are the underlying processes that maintain the conditions for life on Earth, such as nutrient cycling and soil formation (Smith et al. 2011).

The concept of ecosystem services has emerged as a way of framing and describing the comprehensive set of benefits that people receive from nature. The Forest Service has been exploring use of these concepts to describe the benefits provided by forests, but the ecosystem service approach has not been applied operationally in a management context. The Forest Service's Pacific Northwest Research Station issued a technical report that attempts to define an economics research program to describe and evaluate ecosystem services (Kline 2006). More recently, the Pacific Northwest Research Station and the Deschutes National Forest have partnered to develop a place-based application to explore how this type of approach might be implemented by a national forest to enhance forest stewardship. Ecosystem services are discussed at the forest planning level for the Tongass National Forest in the 2008 Forest Plan EIS (USDA Forest Service 2008b, p. 3-544 to 3-556).

Under the 2008 Forest Plan, timber management activities are governed by a large number of rules and regulations designed to protect or mitigate negative impacts to natural resources that provide ecosystem services. This is discussed further in the 2008 Forest Plan EIS (USDA Forest Service 2008b, p. 3-553 to 3-556). These rules and regulations would remain in place under all of the alternatives evaluated in this EIS. Further, the maximum amounts of timber that could be harvested under these alternatives (see Table 3.22-13) is substantially lower than the range of Allowable Sale Quantity volumes evaluated in the 2008 Forest Plan EIS. The effects of the alternatives on these types of services are assessed in the sections of this EIS that address watersheds, fisheries, soils, wildlife and subsistence use, heritage resources, and timber and vegetation, among others. Monetary values are not assigned to these services, but this does not lessen their importance in the decision making process. Decision-makers will consider the economic values presented in elsewhere in this section within the context of the information presented elsewhere in this document, much of which cannot readily be translated into economic terms.

Cumulative Effects

This section considers the incremental effects of the alternatives when added to other past, present, and reasonably foreseeable actions. The effects of past and present actions on the economic and social environment are included in the Affected Environment portion of this section, which discusses the regional economy, as well as providing a subregional overview, and assessing potential impacts at the community level. These sections summarize current employment levels and other key aspects of natural resource-based industries, and also assess recent trends.

Reasonably foreseeable actions on National Forest System lands include the projected levels of future timber harvest and renewable energy development that are used in the preceding analysis to assess the potential impacts of the alternatives on the regional and local economies. Other reasonably foreseeable actions include regional transportation development as defined by the State Transportation Plan and the Forest Service Alaska Region Long Range Transportation Plan, as well as road paving on Prince of Wales Island, the closing of roads, and construction of the Angoon Airport. In addition, the expansion of cities like Juneau and Ketchikan, recreational cabin development, and land auctions by the State could include additional road construction. Appendix C provides a full list of all the projects considered in the cumulative effects analysis.

It is not possible at this time to predict exactly which roads would be developed or their likely impact on future recreation and other activities and associated employment. None of the alternatives are expected to affect this type of future road development, which would be expected to go forward regardless of the selected alternative. The overall cumulative effect of new regional road corridors viewed in conjunction with the proposed Forest Plan alternatives would be a trend toward more developed recreation opportunities that would be relatively high under Alternative 2 and relatively low under Alternative 1. Planned timber harvest activities on adjacent private and Native Corporation lands would also result in a cumulative trend toward more developed recreation opportunities that would be most pronounced under Alternative 2 and least pronounced under Alternative 1.

Mining activities are expected to expand at existing sites, including Greens Creek on Admiralty Island and Kensington Gold Mine north of Juneau, as well as possible future sites, including the Bokan Mountain and Niblack sites on the southern end of Prince of Wales Island. Continued mining at existing sites and ongoing exploration efforts would likely support existing levels of mining employment and income. This employment and income would increase if there were an increase in exploration and development.

Subregional Overview and Communities

Introduction

The preceding section of this document addressed the potential impacts of the proposed alternatives upon the regional economy as a whole. Potential impacts would not, however, be experienced similarly by all boroughs or communities in Southeast Alaska or distributed equally among them. It is, therefore, important to consider the potential effects at a more detailed geographic scale. The following section is divided into two parts. The first part, entitled Subregional Overview, addresses the economic and social composition of the boroughs that comprise Southeast Alaska. This discussion provides an important perspective on the likely distribution of the potential effects identified in the regional economy analysis, as well as setting the stage for the second part of this section, which discusses the potential effects of the alternatives on each of Southeast Alaska's 32 communities.

Subregional Overview

There are large differences in the economic structure and development of the boroughs that comprise Southeast Alaska. A common problem encountered in the analysis of the Southeast Alaska economy is that, owing to its relative size, Juneau dominates statistics at the regional level. As a result, regional trends in population, employment, or income tend to closely represent developments in Juneau and often do not reflect changes in other boroughs. By analyzing certain demographic and economic statistics at the borough level, differences in social and economic characteristics and trends that are obscured at the regional level, are more apparent. The following sections discuss population, employment, and income and poverty trends at the borough level.

As previously noted in the *Regional and National Economy* section, above, a significant portion of Southeast Alaska is not located within the boundaries of a borough. Communities that are located outside of a borough do not have a regional form of government, however, socioeconomic data is readily available by census area (CA) as established by the U.S. Census Bureau. The remaining areas that are not part of a borough are allocated to two CAs: the Hoonah-Angoon and Prince of Wales-Hyder CAs. CAs are only statistical units, but are widely recognized from a data reporting standpoint by federal agencies and most state agencies as county equivalents. Boroughs and CAs are collectively referred to as "boroughs" in this section.

Population

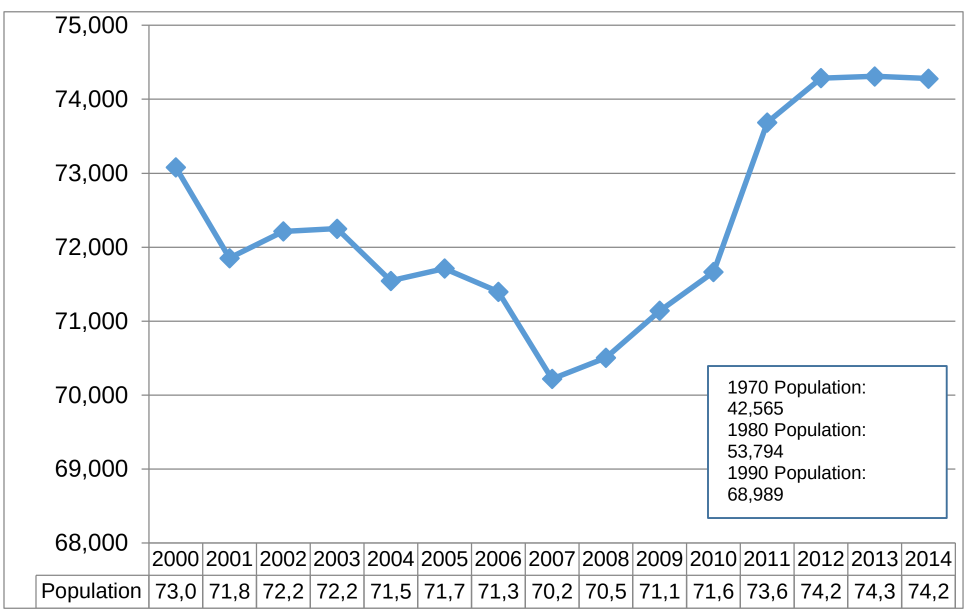
Alaska's statewide population has grown since 2000, increasing from about 627,000 in 2000 to approximately 710,000 in 2010, an increase of 13 percent, and has continued to increase since 2010, with a total estimated population of 736,000 in 2014 (Table 3.23-1). Southeast Alaska has not experienced similar growth and in fact lost population between 2000 and 2010, with a net decrease of 1,418 people or 2 percent. Total population in Southeast Alaska has fluctuated since 2000, reaching its lowest point in 2007. Population has increased each year from 2008 through 2013, before dropping slightly in 2014 (Figure 3.23-1).

Table 3.23-1
Borough/Census Area Population, 2000, 2010, and 2014

Area Name	2000	2010	2014	2000 to 2010 Net Change	2000 to 2010 Percent Change	2010 to 2014 Net Change	2010 to 2014 Percent Change
Northern Boroughs							
Haines Borough	2,392	2,508	2,537	116	5%	29	1%
Hoonah-Angoon CA	2,574	2,150	2,128	-424	-16%	-22	-1%
City and Borough of Juneau	30,711	31,275	33,026	564	2%	1,751	6%
City and Borough of Sitka	8,835	8,881	9,061	46	1%	180	2%
Municipality of Skagway Borough	862	968	1,031	106	12%	63	7%
City and Borough of Yakutat	808	662	631	-146	-18%	-31	-5%
Southern Boroughs							
Ketchikan Gateway Borough	14,067	13,477	13,825	-590	-4%	348	3%
Petersburg Borough	4,260	3,815	3,209	-445	-10%	-606	-16%
Prince of Wales-Hyder CA	6,125	5,559	6,426	-566	-9%	867	16%
City and Borough of Wrangell	2,448	2,369	2,406	-79	-3%	37	2%
Southeast Alaska	**73,082**	**71,664**	**74,280**	**-1,418**	**-2%**	**2,616**	**4%**
Alaska	626,932	710,231	735,601	83,299	13%	25,370	4%

CA = Census Area
Source: Alaska DOL 2010a, 2014d

Figure 3.23-1
Southeast Alaska Population, 1970, 1980, 1990, and 2000 through 2014



Changes from 2000 to 2010 at the borough level ranged from large relative decreases of 16 percent and 18 percent for Hoonah-Angoon and Yakutat, respectively, to a net increase of 12 percent for Skagway. All of the southern boroughs lost population over this period, as did two of the six northern boroughs (Table 3.23-1).

Population has continued to decline in three of the boroughs since 2010, with Petersburg experiencing the largest absolute and relative decrease, with a net loss of 606 people, a drop of 16 percent. The other seven boroughs experienced net increases in population from 2010 to 2014, with the largest absolute increases occurring in Juneau and Prince of Wales-Hyder. The net population gain in Juneau (1,751 people) was equivalent to two-thirds of Southeast Alaska's population increase over this period; the net gain in Prince of Wales-Hyder (867 people) was equal to one-third (Table 3.23-1).

Components of regional population change for 2010 through 2014 indicate that all of the boroughs in Southeast Alaska experienced natural increase (more births than deaths) over this period (Alaska DOL 2014d). Half of the boroughs also experienced net in-migration over this period, with the largest gain in Juneau where 800 more people moved to the borough than left.

Population projections developed by the State of Alaska anticipate continued growth statewide, but generally expect population to decline in Southeast Alaska (Howell 2014). Southeast Alaska is the only region in Alaska where population is expected to decline over the forecast period (2012 to 2042). Past State projections have anticipated that population will decline in Southeast Alaska because low birth rates and the highest median age in the state mean that a sharp rise in net in-migration would be required for growth to occur in the future (Mercer 2010). Current projections anticipate that the population of Alaska will increase by 26 percent between 2012 and 2042, while the population of Southeast Alaska is expected to decrease by 4 percent (Howell 2014). Viewed at the borough level, population is expected to decrease in seven of the 10 boroughs over the forecast period, with projected decreases ranging from 6 percent (Prince of Wales-Hyder) to 31 percent (Hoonah-Angoon). Projected increases range from 1 percent (Haines) to 5 percent (Skagway), with the population of Juneau expected to increase by 2 percent from 2012 to 2042 (Howell 2014).

Age

Median age in the state of Alaska was 34.4 years in 2014, slightly lower than the national average of 37.6 years. The median age was higher than the state and national average in all of the boroughs that make up Southeast Alaska, ranging in the northern boroughs from 37.7 years in Juneau to 48.5 years in Haines; median age in the southern boroughs ranged from 39.3 years in Ketchikan to 47.2 years in Wrangell (Table 3.23-2). The median age stayed relatively constant in Alaska as a whole over the last decade, increasing by just 0.7 year from 2005 to 2014. Skagway and Juneau saw similar modest increases over this period, while most other boroughs in Southeast Alaska aged more rapidly, with the largest increases occurring in Yakutat (+3.9 years), Petersburg (+4 years), and Hoonah-Angoon (+5.4 years) (Table 3.23-2).

In 2014, 14.5 percent of the U.S population was 65 years and over compared to just 9.7 percent in Alaska and 12.4 percent in Southeast Alaska (Table 3.23-2). The share of the population 65 years and above in the northern boroughs ranged from 10.5 percent in Juneau to 17.9 percent in Haines; in the southern boroughs, the share of the population 65 years and above ranged from 12.3 percent (Prince of Wales-Hyder) to 18.2 percent (Wrangell) (Table 3.23-2).

The age dependency ratio is the ratio of the non-working (dependent) population – those younger than 15 years or older than 64 years – to the working-age population – those ages 16 to 64 years old. Expressed as the number of dependents per 100 working age people, the national age-dependent ratio in the U.S. in 2014 was 51 percent. The age dependency ratio in 2014 in Alaska and Southeast Alaska was 45.3 percent in both cases (Table 23-2). Viewed by borough, age-dependency ratios in Southeast Alaska ranged from 34.8 percent in Skagway to 56.3 percent in Wrangell.

Table 3.23-2
Age by Borough

	Median Age (Years)		Population by Age 2014 (Percent)			
Area Name	**2014**	**Net Change 2005-2014**	**0-14**	**15-64**	**65 and Over**	**2014 Dependency Ratio[1]**
Northern Boroughs						
Haines Borough	48.5	3.0	14.9	67.2	17.9	48.9
Hoonah-Angoon CA	47.8	5.4	16.8	65.8	17.4	52.0
City and Borough of Juneau	37.7	0.7	18.7	70.8	10.5	41.2
City and Borough of Sitka	38.8	1.9	19.2	67.3	13.5	48.6
Municipality of Skagway Borough	42.4	0.4	13.2	74.2	12.6	34.8
City and Borough of Yakutat	43.9	3.9	17.0	68.5	14.6	46.1
Southern Boroughs						
Ketchikan Gateway Borough	39.3	1.1	18.8	68.3	12.9	46.5
Petersburg Borough	42.3	4.0	19.6	65.4	15.0	52.9
Prince of Wales-Hyder	40.2	1.6	21.3	66.4	12.3	50.5
City and Borough of Wrangell	47.2	2.3	17.9	64.0	18.2	56.3
Southeast Alaska	**na**	**na**	**18.7**	**68.8**	**12.4**	**45.3**
Alaska	34.4	0.7	21.5	68.8	9.7	45.3

[1] The age dependency ratio is calculated by dividing the combined under 18 and 65-and-over population by the 18 to population and multiplying by 100.
Source: Alaska DOL 2010b, 2014d

Employment

Employment data by sector are presented for 2013 by borough and for Southeast Alaska and Alaska in Table 3.23-3. The self-employed (identified as proprietors in Table 3.23-3) make up a larger share of total employment in Southeast Alaska than in the state as a whole, 27.1 percent versus 20.8 percent (Table 3.23-3). Viewed by borough, self-employment as a share of total employment ranged from 4.9 percent (Yakutat) to 71.1 percent (Haines). Sectors with high shares of self-employment include commercial fishing, recreation and tourism, and logging. Government is a major employer in the two boroughs (Yakutat and Juneau) with the lowest relative shares of self-employment (Table 3.23-3).

Annual employment data are presented for 2005 through 2014 by borough and for Southeast Alaska and Alaska in Table 3.23-4. These data are also shown graphically in Figures 3.23-2 through 3.23-4. Annual unemployment rates were 6.8 percent in Alaska and 7.1 percent Southeast Alaska in 2014, compared to a national average of 6.2 percent (Table 3.23-4, Figure 3.23-2). Viewed by northern borough, annual unemployment rates in 2014 ranged from 5.1 percent in Juneau and Sitka to 15.5 percent in Hoonah-Angoon (Table 3.23-4, Figure 3.23-3). Annual unemployment rates in 2014 in the southern boroughs ranged from 7.6 percent in Ketchikan to 13.5 percent in Prince of Wales-Hyder (Table 3.23-4, Figure 3.23-4).

Table 3.23-3
Employment by Sector by Borough 2013

Economic Sector	Northern Boroughs						Southern Boroughs					
	Haines Borough	Hoonah-Angoon CA	Juneau City and Borough	Sitka City and Borough	Municipality of Skagway Borough	Yakutat City and Borough	Ketchikan Gateway Borough	Peters-burg Borough	Prince of Wales-Hyder CA	Wrangell City and Borough	Southeast Alaska	Alaska
Total full-time and part-time employment[1]	3,606	1,384	20,640	6,687	1,567	329	10,482	3,108	3,611	1,731	**53,145**	461,935
Type of Employment (Percent of Total)												
Wage and salary	28.9	54.6	90.8	69.6	53.1	95.1	74.5	48.6	60.7	52.3	**72.9**	79.2
Proprietors	71.1	45.4	9.2	30.4	46.9	4.9	25.5	51.4	39.3	47.7	**27.1**	20.8
Wage and Salary Employment by Industry (Percent of Total)[2]												
Farming	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.1**	0.2
Forestry, fishing, related activities, and other	(D)	(D)	(D)	(D)	(L)	(D)	4.5	(D)	10.5	14.7	**2.1**	2.4
Mining	(D)	0.0	(D)	2.2	5.7	(L)	1.6	(D)	5.2	3.5	**1.2**	4.9
Construction	6.1	3.5	4.4	7.0	4.1	(D)	5.8	2.9	4.8	4.3	**5.0**	5.3
Manufacturing	6.3	(D)	1.8	(D)	4.5	(D)	6.4	11.9	5.1	8.4	**3.8**	3.6
Wholesale trade	0.7	(D)	(D)	0.6	(L)	0.0	(D)	0.6	(D)	(D)	**0.2**	1.6
Retail trade	7.8	6.3	10.5	8.3	14.4	(D)	11.5	9.6	9.1	7.2	**9.9**	9.6
Transportation and warehousing	(D)	4.6	5.5	5.5	(D)	(D)	7.5	2.8	2.2	(D)	**4.7**	5.2
Finance and insurance	3.1	0.0	1.5	1.3	(D)	(L)	2.9	(D)	10.6	2.3	**2.3**	2.5
Real estate	6.4	(D)	2.3	2.2	(D)	(D)	4.1	(D)	4.1	2.5	**2.7**	3.4
Services (Consumer)[3]	23.0	(D)	13.1	13.5	20.9	(D)	14.0	11.3	10.3	4.2	**13.2**	14.1
Services (Producer)[3]	12.3	(D)	6.6	3.6	3.4	(D)	2.3	2.2	1.1	0.0	**4.6**	9.9
Services (Social)[3]	13.7	(D)	9.7	12.7	1.7	(L)	11.3	(D)	4.5	(D)	**8.9**	12.2
Federal government	0.8	8.6	6.0	5.7	3.4	7.6	4.8	5.0	3.6	3.9	**5.1**	9.3
State and local government	5.6	19.1	29.8	15.6	7.5	36.8	17.1	12.8	24.2	15.9	**21.2**	13.9

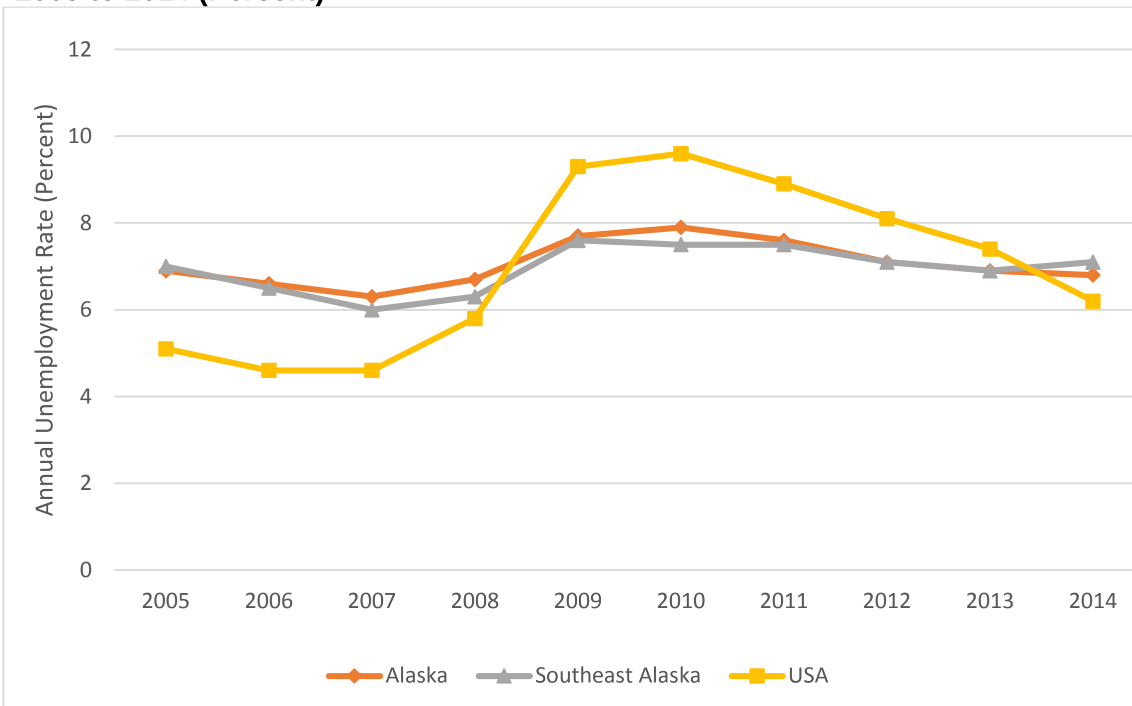
Notes:
[1] Total employment includes self-employed individuals. Employment data are by place of work, not place of residence, and, therefore, include people who work in the area but do not live there. Employment is measured as the average annual number of jobs, both full- and part-time, with each job a person holds counted at full weight.
[2] Percentages for the counties do not sum to 100 because employment counts are not provided for sectors with less than 10 jobs or for sectors where counts would disclose confidential information. These sectors are identified by (D) or (L) in the above table. These numbers are, however, included in the totals.
[3] Nine 2-digit North American Industry Classification System (NAICS) categories are combined into these three divisions for ease of presentation. Consumer service includes: other services; arts, entertainment, and recreation; and accommodation and food services. Producer services includes: information; professional and technical services; management of companies and enterprises; and administrative and waste services. Social services includes: educational services; and health care and social assistance.
Source: U.S. Bureau of Economic Analysis 2014d

Table 3.23-4
Annual Unemployment Rates, 2005 to 2014 (Percent)

Region	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Northern Boroughs										
Haines Borough	9	7.9	7.1	8.5	9	10.6	10.1	10	9.9	10.3
Hoonah-Angoon CA[1]	13.3	12.5	12	12.4	14.7	14.1	15.2	14.4	14.6	15.5
City and Borough of Juneau	5.3	4.8	4.3	4.6	5.9	5.9	5.6	5.1	5	5.1
City and Borough of Sitka	5.5	5.3	4.9	5.6	6.2	6.3	6.1	5.7	5.4	5.1
Municipality of Skagway Borough[1]	13.3	12.5	12	12.4	14.7	14.5	16.2	13.8	12.1	11.6
City and Borough of Yakutat	10.6	9.6	6.5	7.2	11.5	10.8	10.7	9.7	9.4	9.8
Southern Boroughs										
Ketchikan Gateway Borough	6.7	6	5.4	5.7	7.1	8.8	8.5	7.9	7.5	7.6
Petersburg Borough[2]	10.1	9.4	9.3	10.2	10.4	7.9	8.4	8.3	9.2	9.8
Prince of Wales-Hyder CA[3]	13.1	14.1	13.1	13.3	15.2	10.5	12.4	13.3	11.9	13.5
City and Borough of Wrangell[2]	10.1	9.4	9.3	10.2	10.4	8	7.5	8.3	8	8.9
Southeast Alaska	**7**	**6.5**	**6**	**6.3**	**7.6**	**7.5**	**7.5**	**7.1**	**6.9**	**7.1**
Alaska	6.9	6.6	6.3	6.7	7.7	7.9	7.6	7.1	6.9	6.8

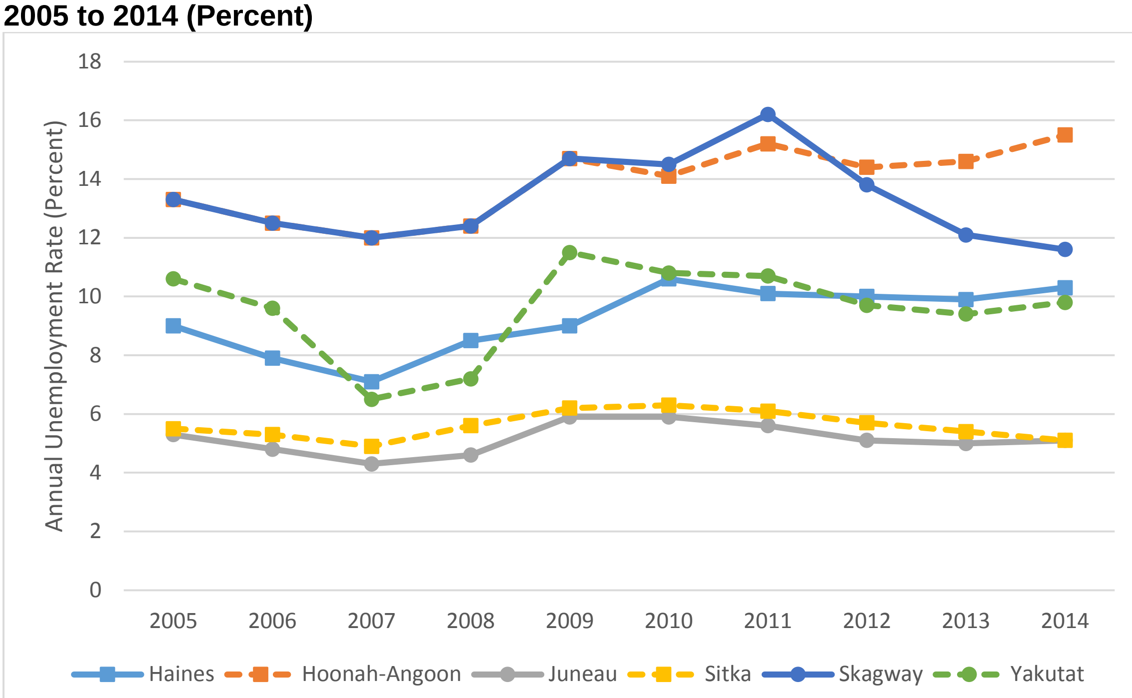
Notes:
[1] Data for 2005 through 2009 are for the Skagway-Hoonah-Angoon CA.
[2] Data for 2005 through 2009 are for the Wrangell-Petersburg CA.
[3] Data for 2005 through 2009 are for the Prince of Wales-Outer Ketchikan CA.
Source: Alaska DOL 2015b

Figure 3.23-2
Annual Unemployment Rates in Southeast Alaska, Alaska, and the United States, 2005 to 2014 (Percent)



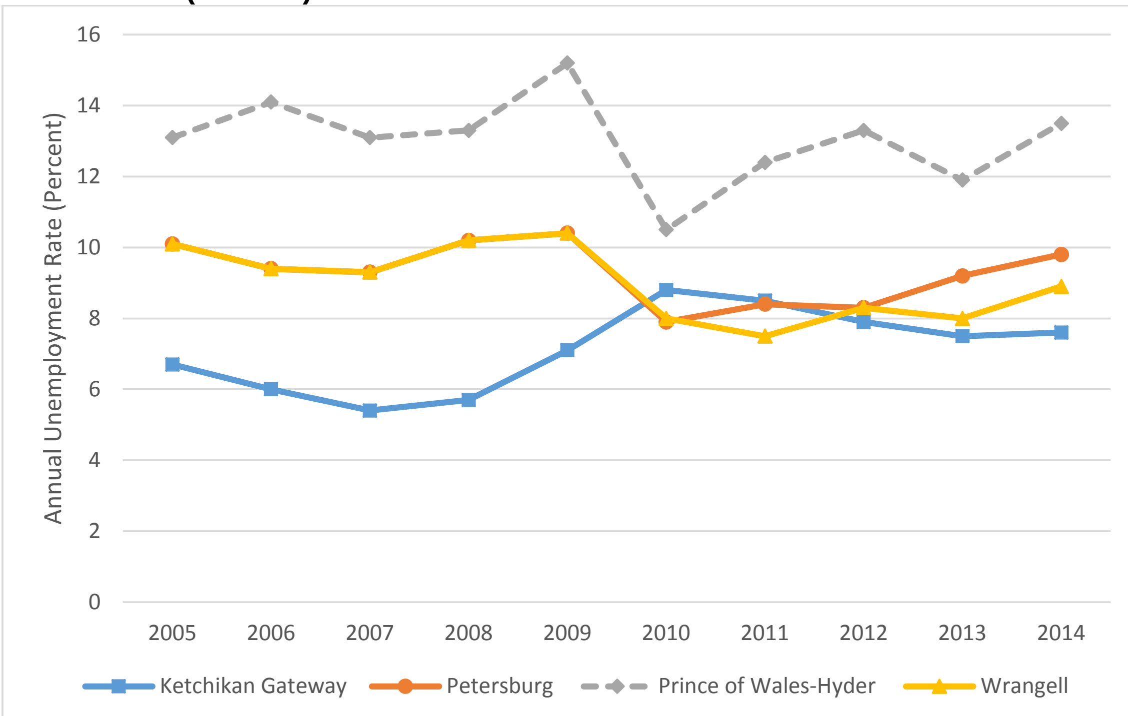
Source: Alaska DOL 2015b; U.S. Bureau of Labor Statistics 2015

Figure 3.23-3
Annual Unemployment Rates in the Northern Boroughs of Southeast Alaska, 2005 to 2014 (Percent)



Note:
[1] Data shown for the Hoonah-Angoon CA and Municipality of Skagway for 2005 through 2009 are for the Skagway-Hoonah-Angoon CA
Source: Alaska DOL 2015b; U.S. Bureau of Labor Statistics 2015

Figure 3.23-4
Annual Unemployment Rates in the Southern Boroughs of Southeast Alaska, 2005 to 2014 (Percent)



Notes:
[1] Data shown for the Petersburg CA and City and Borough of Wrangell for 2005 through 2009 are for the Wrangell-Petersburg CA.
[2] Data shown for the Prince of Wales-Hyder CA for 2005 through 2009 are for the Prince of Wales-Outer Ketchikan CA.
Source: Alaska DOL 2015b; U.S. Bureau of Labor Statistics 2015

Income and Poverty

Per capita income in Southeast Alaska in 2013 was $54,722, approximately 9 percent higher than the state per capita ($50,150) (Table 3.23-5). Viewed by borough, per capita income in 2013 ranged from $36,354 in Prince of Wales-Hyder to $85,326 in Haines, ranging from the equivalent of 72 percent to 170 percent of the state per capita. Per capita income was higher than the state per capita in 6 of the 10 boroughs in Southeast Alaska (Table 3.23-5).

Labor earnings accounted for slightly more than two-thirds of per capita income in Southeast Alaska (67 percent) and Alaska as a whole (68 percent). Labor earnings as a share of per capita income by borough ranged from 55 percent (Wrangell) to 77 percent (Haines), and was below the state share (68 percent) in seven of the 10 Southeast Alaska boroughs (Table 3.23-5; Figure 3.23-5).

Transfer payments accounted for 13 percent and 14 percent of regional and statewide per capita income in 2013. Viewed by borough, the share ranged from just 9 percent in Skagway to 23 percent in Hoonah-Angoon and Wrangell, and was above the state share in six of the 10 Southeast Alaska boroughs (Table 3.23-5; Figure 3.23-5). As discussed in the Regional and National Economy section, above, transfer payments consist mainly of government payments to individuals, including retirement, disability, and unemployment insurance benefit payments, income maintenance payments, and veterans benefit payments.

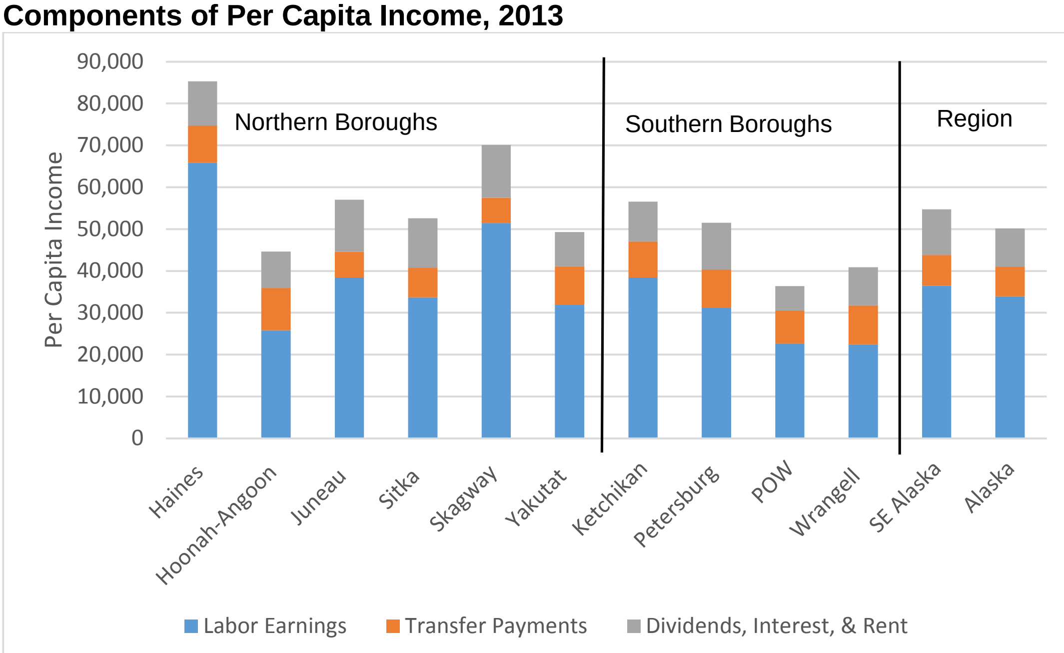
Table 3.23-5
Components of Per Capita Income, 2013

Area Name	Labor Earnings[1]		Transfer Payments[2]		Dividends, Interest, and Rent		Per Capita Income Total	
	Dollars	Percent of Total[3]	Dollars	Percent of Total[3]	Dollars	Percent of Total[3]	Dollars	Percent of State Per Capita
Northern Boroughs								
Haines Borough	65,773	77	8,948	10	10,605	12	85,326	170
Hoonah-Angoon CA	25,820	58	10,127	23	8,671	19	44,618	89
City and Borough of Juneau	38,440	67	6,121	11	12,473	22	57,034	114
City and Borough of Sitka	33,734	64	7,074	13	11,800	22	52,608	105
Municipality of Skagway Borough	51,461	73	6,011	9	12,593	18	70,065	140
City and Borough of Yakutat	31,898	65	9,206	19	8,165	17	49,269	98
Southern Boroughs								
Ketchikan Gateway Borough	38,477	68	8,589	15	9,525	17	56,591	113
Petersburg Borouigh	31,282	61	9,069	18	11,189	22	51,540	103
Prince of Wales-Hyder CA	22,713	62	7,875	22	5,766	16	36,354	72
City and Borough of Wrangell	22,482	55	9,331	23	9,077	22	40,890	82
Southeast Alaska	**36,464**	**67**	**7,331**	**13**	**10,927**	**20**	**54,722**	**109**
Alaska	33,964	68	7,087	14	9,099	18	50,150	100

Notes:
[1] Earnings includes wages and salaries, other labor income, and proprietors' income.
[2] Transfer payments consist mainly of government payments to individuals, including retirement, disability, and unemployment insurance benefit payments, income maintenance payments, and veterans benefit payments. Government payments to individuals in Alaska include Alaska Permanent Fund benefits, which are derived from oil revenues and paid to every resident.
[3] Percent of total per capita income.
Source: U.S. Bureau of Economic Analysis 2014e

The final broad component of per capita income – dividends, interest, and rent – made up 20 percent and 18 percent of regional and statewide per capita income in 2013. Dividends, interest, and rent as a share of per capita income by borough ranged from 12 percent (Haines) to 22 percent (Juneau, Sitka, Petersburg, and Wrangell) (Table 3.23-5; Figure 3.23-5).

Figure 3.23-5
Components of Per Capita Income, 2013



Notes:
1/ See footnotes to Table 3.23-5
Source: U.S. Bureau of Economic Analysis 2014e

Median household income in 2013 ranged from $42,276 in Hoonah-Angoon to $83,642 in Juneau, ranging from the equivalent of 60 percent to 119 percent of the state median, respectively (Table 3.23-6). Median household income was lower than the state median in all of the boroughs in Southeast Alaska with the exception of Juneau. The share of the population below the poverty level in the northern boroughs in 2013 ranged from 4.2 percent in Skagway to 19.2 percent in Hoonah-Angoon compared to the statewide average of 10.1 percent; in the southern boroughs, the share of the population below the poverty level ranged from 10.3 percent in Ketchikan to 17.4 percent in Prince of Wales-Hyder (Table 3.23-6). The share of children aged 5 to 17 in families below the poverty line in households in the northern boroughs in 2013 ranged from 6.8 percent in Skagway to 26.8 percent in Hoonah-Angoon compared to a statewide average of 12.5 percent; in the southern boroughs, the corresponding shares ranged from 12.9 percent in Ketchikan to 22.0 percent in Prince of Wales-Hyder (Table 3.23-6).

School enrollment and the number of students eligible for free and reduced-price lunch (FRPL) is summarized by borough for 2015 in Table 3.23-7. The number of students eligible for FRPL may be used as a way of evaluating poverty in school districts. The National School Lunch Program (NSLP) is administered by the USDA, Food and Nutrition Service, which provides free meals to eligible children in households with income at or below 130 percent of the federal poverty guidelines, and reduced-price meals to eligible children in households with income between 130 and 185 percent of these guidelines (Cruse and Powers 2006). Viewed as a share of total school enrollment, students eligible for FRPL in the northern boroughs in 2015 ranged from 29 percent in Juneau to 86 percent in Yakutat compared to a statewide share of 50 percent. In the southern boroughs, the share of students eligible for FRPL ranged from 41 percent in Ketchikan to 79 percent in Prince of Wales-Hyder (Table 3.23-7).

Table 3.23-6
Median Household Income and Poverty, 2013

Geographic Area	Median Household Income	Percent of State Median	Percent Below the Poverty Line: Total Population	Percent Below the Poverty Line: Age 5 to 17 in Families
Northern Boroughs				
Haines Borough	55,295	78.9	11.4	16.3
Hoonah-Angoon CA	42,276	60.3	19.2	26.8
City and Borough of Juneau	83,642	119.4	7.5	8.1
City and Borough of Sitka	66,038	94.3	9.8	10.9
Municipality of Skagway Borough	63,930	91.3	4.2	6.8
City and Borough of Yakutat	56,365	80.5	16.7	25.8
Southern Boroughs				
Ketchikan Gateway Borough	62,619	89.4	10.3	12.9
Petersburg Borough	58,176	83	10.7	11.4
Prince of Wales-Hyder	48,175	68.8	17.4	22.0
City and Borough of Wrangell	49,039	70	13.9	17.6
Alaska	**70,058**	**100**	**10.1**	**12.5**
United States	52,250	74.6	15.8	20.8

Source: U.S. Census Bureau 2014c

Table 3.23-7
School Enrollment and Number of Students Eligible for Free and Reduced-Price Lunch by Borough, 2015

Geographic Area	Total Enrolled Students	Students Qualifying for: Free Lunch	Reduced-Price Lunch	FRPL Total	FRPL as a Percent of Total Enrolled Students
Northern Boroughs					
Haines Borough	275	108	15	123	45
Hoonah-Angoon CA	194	131	19	150	77
City and Borough of Juneau	5,056	1,249	214	1,463	29
City and Borough of Sitka	1,491	394	110	504	34
Municipality of Skagway Borough[1]	62	1	2	3	5
City and Borough of Yakutat	96	74	9	83	86
Southern Boroughs					
Ketchikan Gateway Borough	2,347	785	178	963	41
Petersburg Borough	431	190	35	225	52
Prince of Wales-Hyder CA	1,200	890	59	949	79
City and Borough of Wrangell	272	112	35	147	54
Alaska	**115,431**	**51,640**	**6,275**	**57,915**	**50**

Notes:
FRPL –Free and Reduced-Price Lunch
[1] Data for the Skagway School District are for 2013, the last year that these data were compiled for this district.
Source: Alaska Department of Education & Early Development 2015

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Communities

Community is a concept with multiple dimensions and definitions. Basic definitions of community include: 1) a geographic/political entity, such as a town or village; 2) a network of people with shared values, world views, or identities (sometimes called a community of meaning), such as an ethnic or racial group (e.g., Native Alaskans) or an occupational group (e.g., loggers); 3) a working social system; 4) a rural social landscape, which would include the first three definitions in a rural setting; and 5) a community of interest, or people with a common stake, profession, interest, activity, or set of values, who may live far apart (e.g., anglers, environmentalists, off-road-vehicle operators).

This section uses the geographic/political community—towns and villages—as its basis for several reasons. There are relatively few communities in Southeast Alaska, they are typically isolated geographically, most are recognized as being unique, and data are more commonly available at this level. Geographic/ political communities represent an aggregate of individuals and it is important to remember that residents within the same community may be affected differently by the same action. Potential effects that do not appear that significant when viewed at a community level may be very significant for the individuals that are directly affected.

Community Assessments

The 1997 Forest Plan EIS included discussions of 32 Southeast Alaska communities with a state land selection base. In addition, the city of Kupreanof is included as part of the discussion of Petersburg and Klukwan is part of the discussion of Haines. These discussions provided brief descriptions of each community, including aspects of their histories, population trends, economic bases, and the subsistence resources used by each community. Each community discussion also included a summary of the public comments and testimony received by the Forest Service on the 1990 Draft Environmental Impact Statement (DEIS), 1991 Supplemental DEIS, and the 1996 Revised Supplement. Much of the baseline community information provided in those discussions was taken from the Alaska Department of Community and Regional Affairs (Alaska DCRA) *Community Profiles* (1996) and 1990 U.S. Census data. Subsistence information was mainly based on the findings of the 1989 Tongass Resource Use Cooperative Survey (TRUCS). Updated summary data are presented by community in Table 3.23-8. These data suggest that these communities are diverse in terms of population, income, and subsistence use. There is also a good deal of variation within many of the communities, as reflected by the range of public comments received during preparation of the 1997 Forest Plan EIS, the 2003 SEIS, and the 2008 Forest Plan Amendment EIS (USDA Forest Service 1997a; 2003b).

This document provides brief updates of the affected environment sections of the community discussions, where applicable. The reader is referred to the 1997 Tongass Forest Plan EIS for more detailed information on community history, economic base, and subsistence resources. The 1987 TRUCS data used in the 1997 Forest Plan EIS discussions is still the most current consistent source of subsistence information available. Updated information from the Alaska Department of Fish and Game (ADF&G) Subsistence Community Profile Database is provided in the following discussions, where available.

Data from the 2010 Census as well as more recent data available from the U.S. Census Bureau's 2009-2013 5-year American Community Survey (ACS) and the Alaska Department of Labor (DOL) have been incorporated in the community discussions. These include data maintained by the state for the number of people who work in different industries. These data are direct counts for each community; however, self-employed residents (often in commercial fishing) and federal employees (e.g., Forest Service) are not included. Fishing, other self-employment, and federal government work are noted separately where appropriate.

The community of Meyers Chuck was incorporated into the City and Borough of Wrangell in June 2008; therefore, many of the statistics reported in this section are no longer collected or estimated for this area individually. Data for Meyers Chuck are from the 2000 Census and other sources as available.

The effects of the alternatives considered in the 1997 Forest Plan EIS were evaluated in terms of community use area effects. Community use areas depict the approximate extent of each community's day-to-day use area. Potential community effects were also estimated with the help of a Socioeconomic Panel and Subsistence Workshop, which were convened to assess the potential effects of the planning alternatives for the 1997 Forest Plan EIS. The Socioeconomic Panel assessed these potential effects in terms of timber employment, tourism/recreation employment, mining employment, economic structure/diversity, community stability, quality of life, recreation opportunities, and access to traditional lifestyles. The Subsistence Workshop involved a group of subsistence specialists who met to offer professional judgement regarding the potential effects of planning alternatives on 30 selected subsistence communities (Juneau and Ketchikan do not meet the federal definition of subsistence community). In addition, the Sitka black-tailed deer habitat capability model output was analyzed for the Wildlife Analysis Areas (WAAs) where each community obtained approximately 75 percent of their average annual deer harvest. This analysis is discussed further in the 1997 Forest Plan EIS. An updated deer habitat capability model-based analysis is used here and is presented in the Wildlife section.

The analysis presented here draws upon these information sources to assess the effects of the five alternatives under consideration by community. Each community discussion includes a map of that community's use area, as defined by the 1997 Forest Plan revision EIS. These maps are accompanied by tables that summarize the estimated maximum harvest by acres that could occur in the community's use area over the 100-year planning horizon. Whether any timber harvesting would actually take place on the suitable lands within the community use area over the next decade would depend on the timber sales that are actually carried out during plan implementation. All proposed timber sales would be evaluated on a project-specific basis in accordance with the National Environmental Policy Act (NEPA). The community use area maps and tables are intended to help community residents (and other readers) gain a better understanding of what management direction is proposed for their immediate surroundings under each alternative.

Table 3.23-8
Southeast Alaska Community Statistics

	Population			Median Household Income in 2013[1]	Percent of People Below Poverty Line in 2013	Percent of Labor Force Unemployed in 2013[1]	Subsistence Use (lbs per capita)[2]
	2014	Percent Change 2000 to 2014	Percent Native in 2010				
Angoon	416	-27	76	32,250	23	19	182
Coffman Cove	174	-13	4	31,250	10	12	276
Craig	1,198	-14	20	59,643	18	10	232
Edna Bay	46	-6	0	NA	0	NA	383
Elfin Cove	16	-50	5	43,125	19	32	263
Gustavus	516	20	3	52,188	11	7	241
Haines	1,805	0	11	54,267	8	5	137
Hollis	94	-32	4	33,500	19	33	169
Hoonah	787	-8	53	50,714	17	16	343
Hydaburg	405	6	77	37,361	6	17	531
Hyder	91	-6	1	21,944	5	0	345
Juneau	33,026	8	12	81,490	6	5	NA
Kake	626	-12	69	38,750	28	21	179
Kasaan	75	92	35	43,750	4	19	452
Ketchikan	8,314	0	17	52,266	14	11	NA
Klawock	802	-6	48	37,083	20	16	350
Metlakatla	1,480	8	83	49,663	13	15	70
Meyers Chuck[3]	11	-48	0	64,375	0	0	414
Naukati Bay	121	-10	6	45,750	10	0	242
Pelican	75	-54	34	89,167	5	31	355
Petersburg	2,964	-8	7	66,125	13	4	161
Point Baker	13	-63	0	18,906	78	0	289
Port Alexander	45	-44	4	56,250	0	0	312
Port Protection	56	-11	19	27,875	0	0	451
Saxman	419	-3	51	46,250	31	22	217
Sitka	9,061	3	17	69,405	10	5	205
Skagway	967	19	4	71,435	6	8	48
Tenakee Springs	128	23	1	62,813	14	5	330
Thorne Bay	530	-5	2	49,323	20	8	118
Whale Pass	39	-33	0	NA	58	100	247
Wrangell	2,406	-2	16	45,841	10	8	168
Yakutat	631	-7	36	72,500	6	7	386

Notes:
NA = not available
[1] Data estimated as part of the 2009-2013 5-year American Community Survey (ACS); the 10-year census no longer collects this information. The ACS defines “families” as households consisting of a householder and one or more other people living in the same household who are related to the householder by birth, marriage, or adoption. “People” includes all individuals in the population.
[2] The year these data were collected varies by community, as follows:
1987: Elfin Cove, Gustavus, Hyder, Metlakatla, Meyers Chuck, Pelican, Port Alexander, Skagway, and Tenakee Springs;
1996: Kake, Point Baker, Port Protection, and Sitka.
1997: Craig and Klawock.
1998: Coffman Cove, Edna Bay, Hollis, Kasaan, Naukati Bay, and Thorne Bay.
1999: Saxman
2000: Petersburg, Wrangell, and Yakutat.
2012: Angoon, Haines, Hoonah, Hydaburg, and Whale Pass.
[3] Meyers Chuck was incorporated into the Wrangell City and Borough Census Area, effective June 1, 2008. The most recent data available for this community as a separate area are presented in the table as follows: 2006 Population, Population Percent Change 2000 to 2006, Percent Native in 2000, 2000 Median Household Income, Percent of Households Below the Poverty Line in 2000, Percent of Labor Force Unemployed in 2000, and Subsistence Use in 1987.
Sources: Alaska DOL 2015b; U.S. Census Bureau 2014b; U.S. Census Bureau 2011; ADF&G 2014

Analyzing Impacts to Communities

Small, rural communities are seldom self-contained economic units. Although it is possible to describe a community's economic structure, complex social and economic forces, many of which are outside the control of community residents, have great influence on community economics. This makes it difficult to precisely predict the effects of forest-wide management alternatives on individual communities. Forest Service activities provide economic opportunities to the private sector. How that sector and the various industries that comprise it respond depends on many variables in addition to Forest Service management.

Forest plans are programmatic, meaning that they establish direction and allowable activities for broad land areas, rather than schedule specific activities on specific patches of land. This also makes it difficult to predict effects on individual communities. This is a common source of frustration to local residents, who want to know exactly how they and the places they care about could be affected. While many outputs of forest management, such as scheduled timber harvest, generally translate into social and economic activity, such as employment in the timber industry, it is difficult to predict which communities would benefit the most from that activity. Communities may even compete with each other in many instances. Communities that rely on a given resource-related industry would, however, be expected to be the first to benefit or lose from significant changes in planned output levels affecting that industry.

Another factor affecting the accuracy of predicting specific impacts at the community scale is that people and businesses have proven themselves highly adaptable. Researchers have used the term community resiliency (Harris 1996) or community capacity (FEMAT 1993) to describe a community's ability to weather significant changes. Some of the factors judged important for small, rural communities include community infrastructure, the presence of amenities, social cohesion and effective community leadership, and economic diversity. Some communities will be more effective than others in coping with changes that do result. While information such as population size can be used as a rough proxy for resiliency (generally, larger communities tend to be more resilient than smaller ones), this is not always the case. However, analyses have not been conducted regarding the resiliency of Southeast Alaska communities, and we do not know how well information gained elsewhere applies to understanding Southeast communities. It is also worth noting that while a community as a whole may be resilient to change, individuals within that community could still be negatively affected.

Given these considerations, it is more accurate to identify areas of concern for which the risks of effects from a given alternative are higher or lower, rather than say, "Here is what we know will happen to each and every community." One of the hazards associated with such attempts to assess impacts is that analyses tend to view social and economic conditions as static, failing to consider that economies are dynamic, and adjust to different impacts in different ways.

Population and School Enrollment

Twenty-two out of the 32 Southeast communities identified in Table 3.23-8 (69 percent) lost population between 2000 and 2014, with decreases ranging from -2 percent (Wrangell) to -63 percent (Point Baker). Population in the remaining 10 communities either remained more or less constant (Haines and Ketchikan) over this period or increased, with gains ranging from 3 percent (Sitka) to 92 percent (Kasaan) (Table 3.23-8). Viewed as a region, total population in Southeast Alaska increased by about 2 percent between 2000 and 2014, with relatively large gains in population in Juneau overshadowing losses elsewhere (Table

3.23-1). The following community discussions present annual population estimates for 2000 to 2014 for each community, along with census counts for 1970, 1980, and 1990.

Loss of population is often accompanied by declining school enrollments and decreasing municipal tax bases. Nearly all Southeast communities[1] have had a public community school at one point in time (Table 3.23-9). School enrollment has typically declined as population has decreased. Total school enrollment in Southeast Alaska decreased by 15 percent between 1990 and 2014, with the majority of that decline taking place between 2000 and 2010, with total enrollment in the region as a whole actually increasing slightly from 2010 to 2014 (Table 3.23-9).

Six communities—Edna Bay, Elfin Cove, Hyder, Kasaan, Meyers Creek, and Whale Pass—have seen their school close since 1990, with all but one of these closures occurring since 2000. Three of these schools— Hyder, Kasaan, and Whale Pass—have since re-opened, and were open for the 2014 school year. All but three of the remaining communities—Craig, Kasaan, and Port Protection—had fewer enrolled students in 2010 than two decades earlier in 1990. From 2010 to 2014, enrollment declined in 10 communities, ranging from an absolute loss of 1 student (Klukwan) to 217 students (Juneau). Increases in enrollment ranged from 1 student (Angoon and Port Protection) to 244 students (Ketchikan) (Table 3.23-9).

Several schools that are currently open are hovering on the verge of closure due to enrollments that barely meet the State of Alaska's ten-student minimum requirement including Hollis, Kasaan, Klukwan, Pelican, Port Alexander, Port Protection, Tenakee Springs, and Whale Pass. In these communities, one family can make the difference between an open or closed school.

Table 3.23-9
School Enrollment by Community, 1990, 2000, 2010, and 2014

	School Enrollment				Percent Change		
Community	**1990**	**2000**	**2010**	**2014**	**1990 - 2000**	**2000 - 2010**	**2010 - 2014**
Angoon	189	154	77	78	-19%	-50%	1%
Coffman Cove	47	31	11	24	-34%	-65%	118%
Craig	308	551	630	573	79%	14%	-9%
Edna Bay	15	Closed	9	10	-	-	-
Elfin Cove	9	Closed	Closed	Closed	-	-	-
Gustavus	76	48	57	65	-37%	19%	14%
Haines	470	402	304	276	-14%	-24%	-9%
Hollis	16	14	10	14	-13%	-29%	40%
Hoonah	237	226	123	114	-5%	-46%	-7%
Hydaburg	109	91	61	70	-18	-30	9
Hyder	Closed	12	Closed	10	-	-	-
Juneau	5,081	5,483	4,968	4,751	8%	-9%	-4%
Kake	177	165	85	110	-7%	-48%	29%
Kasaan	10	11	14	12	10%	27%	-14%
Ketchikan	2,799	2,469	2,116	2,360	-12%	-14%	12%
Klawock	203	190	136	121	-6%	-28%	-11%
Klukwan[1]	36	15	14	13	-58%	-7%	-7%
Kupreanof[1 2]	-	-	-	-	-	-	-
Metlakatla	378	325	272	359	-14%	-16%	32%

[1] The 34 communities referenced here are the 32 communities identified in Table 3.23-8 plus Kupreanof and Klukwan. Kupreanof is discussed with Petersburg in the following descriptions; Klukwan is referenced in the discussion of Haines.

Table 3.23-9 (continued)
School Enrollment by Community, 1990, 2000, 2010, and 2014

	School Enrollment				Percent Change		
Community	**1990**	**2000**	**2010**	**2014**	**1990 - 2000**	**2000 - 2010**	**2010 - 2014**
Meyers Chuck[3]	4	Closed	Closed	Closed	-	-	-
Naukati	25	36	19	19	44%	-47%	0%
Pelican	51	23	12	13	-55%	-48%	8%
Petersburg	678	678	487	436	0%	-28%	-10%
Point Baker[2]	-	-	-	-	-	-	-
Port Alexander	25	18	10	10	-28%	-44%	0%
Port Protection	9	27	10	11	200%	-63%	10%
Saxman[2]	-	-	-	-	-	-	-
Sitka	2,008	1,945	1,749	1,796	-3%	-10%	3%
Skagway	148	132	82	86	-11%	-38%	5%
Tenakee Springs	10	11	8	12	10%	-27%	50%
Thorne Bay	168	136	73	76	-19%	-46%	4%
Whale Pass	11	Closed	Closed	11	-	-	-
Wrangell	498	491	344	275	-1%	-30%	-20%
Yakutat	145	167	117	109	15%	-30%	-7%
Total	**13,940**	**13,851**	**11,798**	**11,804**	**-1%**	**-15%**	**0%**

Notes:
[1] Klukwan and Kupreanof are included in the below community discussions for Haines and Petersburg, respectively.
[2] Children attend school in a neighboring community (i.e., Kupreanof to Petersburg, Saxman to Ketchikan, and Point Baker to Port Protection).
[3] Meyers Chuck consolidated with the City of Wrangell when the City and Borough of Wrangell incorporated in 2008.

Energy Generation and Use

Southeast Alaska has a wet, relatively temperate climate, and the combination of high precipitation rates and mountainous terrain provides considerable opportunity for hydroelectric generation. In 2011, hydroelectric power accounted for 96 percent of the region's net power generation, with diesel supplying the other four percent (Fay et al. 2013).

Although it accounts for most of the region's net power generation, hydroelectric power is not evenly distributed among the region's communities. As communities moved toward electrification, hydropower projects were developed in locations near the region's main load centers (i.e., the larger communities). Diesel generation was developed to supplement and backup hydroelectric generation, where it existed, and for communities that could not economically access hydroelectric power. Although relatively easy and inexpensive to install, high fuel costs and the operations and maintenance expenses associated with diesel generators make them expensive to operate.

The existing transmission system in Southeast Alaska is limited, but electric systems in several communities are currently interconnected, as indicated in the *Renewable Energy* section of this EIS. Summarized by region, these interconnected areas are as follows:

- Southeast Alaska Power Agency (SEAPA) Region—The SEAPA system connects Ketchikan, Petersburg, and Wrangell.
- Juneau Area—The Alaska Electric Light & Power (AEL&P) system connects Juneau, Douglas Island, Auke Bay, and Greens Creek.

- Prince of Wales Island—The Alaska Power & Telephone (AP&T) system connects the communities of Coffman Cove, Craig, Hollis, Hydaburg, Kasaan, Klawock, and Thorne Bay.
- Upper Lynn Canal Region—A separate AP&T system connects Haines and Skagway in the Upper Lynn Canal Region and is connected via an intertie to the existing Inside Passage Electrical Cooperative (IPEC) system that serves Klukwan and Chilkat Valley.

The energy requirements of the larger communities in Southeast Alaska, including Juneau, Ketchikan, Sitka, Petersburg, Wrangell, Skagway, and Haines, are met by relatively low cost hydroelectric generation, with diesel generation used as a back-up. This is also the case with a number of smaller communities, including Coffman Cove, Craig, Hollis, Hydaburg, Kasaan, Klawock, and Thorne Bay on Prince of Wales Island, Metlakatla, Saxman, Gustavus, and Pelican.

Fourteen of the remaining 32 communities within or adjacent to the Tongass National Forest are completely dependent upon diesel-generated electricity. Nine of these communities (Angoon, Coffman Cove, Elfin Cove, Hoonah, Kake, Naukati Bay, Tenakee Springs, Whale Pass, and Yakutat), ranging in population in 2014 from 16 to 787, have central electric utility systems that rely on diesel generation. The other five communities that are dependent on diesel generation (Edna Bay, Meyers Chuck, Point Baker, Port Alexander, and Port Protection with 2014 populations ranging from 13 to 56) have no central utility system and residents rely upon individual generators (USDA Forest Service 2010; Alaska DOL 2015d).

Residents in communities in Southeast Alaska that rely primarily on hydroelectric power to generate electricity have the lowest residential rates in the State, with rates as low as 9 cents/kilowatt hour (kWh) in 2011. Rates are much higher in smaller, more remote communities that rely on diesel, with rates ranging up to 75 cents/kWh (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). The State helps to lower the price of electricity for residential customers and community facilities in most of these communities through the Power Cost Equalization (PCE) program. Residential rates for 2011 before and after the application of PCE payments are shown in Table 3 of the Energy Resource Report (Tetra Tech 2015) and discussed in more detail in the *Renewable Energy* section of this EIS.

Commercial and other customers, including community and governmental facilities and industrial customers, are not eligible to participate in the PCE program and there is no comparable program for these customers. These customers pay the full retail cost for power in all communities, including those where residential rates are lowered by the PCE program. Commercial rates in Southeast Alaska communities in 2011 ranged from 9 cents/kWh (Sitka) to 75 cents/kWh (Elfin Cove) (see Table 3 in the Energy Resource Report [Tetra Tech 2015]).

According to the 2012 Southeast Alaska Integrated Resource Plan, the reliance on diesel generation in communities where hydroelectric power is not available has “created a gap or chasm between communities, where stable and “well-to-do” communities exist near struggling communities and a notable absence of private sector economic activity are the norm” (Black & Veatch 2012, p. 1-4). Alexander et al. (2010, p. 8) found that “the high cost of energy in the communities that rely on diesel generation impedes economic development, as decisions to locate new commercial and industrial developments are influenced by the availability of reliable low-cost power.”

Potential Effects by Resource Area

The alternatives have implications for specific places on the Forest and particular parts of the community use areas of various communities. They also have potential implications in terms of employment in resource dependent industries and the availability of subsistence resources. The following paragraphs discuss the potential implications for wood products, recreation and tourism, and subsistence in general terms to provide some background to the reasoning employed in the community effects discussions presented in the following sections.

Wood Products

Based on the analysis presented in the preceding section, projected direct wood products employment in the first decade of implementation would be very similar under all five alternatives (Table 3.22-17). Estimated employment is presented as a range from a maximum allowable export of timber scenario based on the existing R10 limited export policy to a maximum domestic processing scenario that assumes only Alaska yellow cedar would be exported unprocessed.

Renewable Energy

The 2008 Forest Plan identifies three types of area related to energy development on the Tongass based on the existing Land Use Designations (LUDs): windows, which represent areas potentially available for energy development, avoidance areas, and exclusion areas. Avoidance areas are those LUDs where development of energy projects is not considered desirable. Exclusion areas preclude Transportation and Utility Systems. LUDs classified as windows and avoidance areas make up 38 percent and 62 percent of the Forest, respectively. There are no exclusion areas on the Forest due to special authorities provided in the Alaska National Interest Lands Conservation Act (ANILCA), Title XI. These classifications and the standards and guidelines in the 2008 Forest Plan would continue to apply under Alternative 1. Under Alternatives 2 through 5, renewable energy sites would be managed under the Renewable Energy Plan Components identified in Chapter 5 of the proposed Forest Plan amendment. The revised components may affect the timing and rate that new projects are proposed and developed on National Forest System (NFS) lands. This is discussed in detail in the *Renewable Energy* section of this EIS. The individual community assessments below include information about currently proposed renwable energy projects, as appropriate.

Recreation and Tourism

The mix of primitive and roaded recreation opportunities would remain largely unchanged under all alternatives, with most projected harvest expected to occur in Recreation Opportunity Spectrum (ROS) settings where some modification of the natural environment is expected (see Table 3.15-19 in the *Recreation and Tourism* section). Viewed in terms of recreation and tourism employment over the next decade, there would be very little difference between the alternatives.

Subsistence

Among the subsistence resources of greatest importance (salmon, other finfish, marine invertebrates, and deer), deer is the only one that is potentially significantly affected by the alternatives. Therefore, the subsistence analysis presented here uses deer as a key indicator for potential subsistence resource consequences concerning the abundance and distribution of the resources. Timber harvest tends to affect deer-related subsistence activities in two ways. In the short run, approximately 20 to 30 years following harvest, deer populations tend to increase in harvested areas. In the long run, populations tend to decline as the canopy in even-aged forest stands closes, resulting in lower habitat quality. Reductions in habitat quality can be reduced through management (e.g., thinning) of young-growth stands. Deer populations in unharvested areas are likely to remain at fairly constant levels that are typically lower than a comparable harvested area in the short run, but higher in the long run. Road construction also affects subsistence by providing subsistence hunters with ready access to areas that may have been previously inaccessible. This effect may be perceived as either positive or negative depending on the parties involved, as increased access may lead to increased competition for resources. Potential effects are likely to vary by community and may be perceived differently by members of the same or neighboring communities.

While there would be some new road access under all alternatives in the long run, nearly all new roads constructed under the alternatives would be closed following harvest. These roads would, therefore, not be available for use by highway vehicles or high-clearance vehicles. They would, however, be available for access by other methods and would, as a result, have the potential to affect existing subsistence patterns.

Individual Community Assessments

The following sections present socioeconomic descriptions and assessments of impact for 32 Southeast Alaska communities with a state land selection base. These are presented in alphabetical order. Additional information on the history, economy, and subsistence use is presented by community in the 1997 Forest Plan EIS (USDA Forest Service 1997a).

Angoon

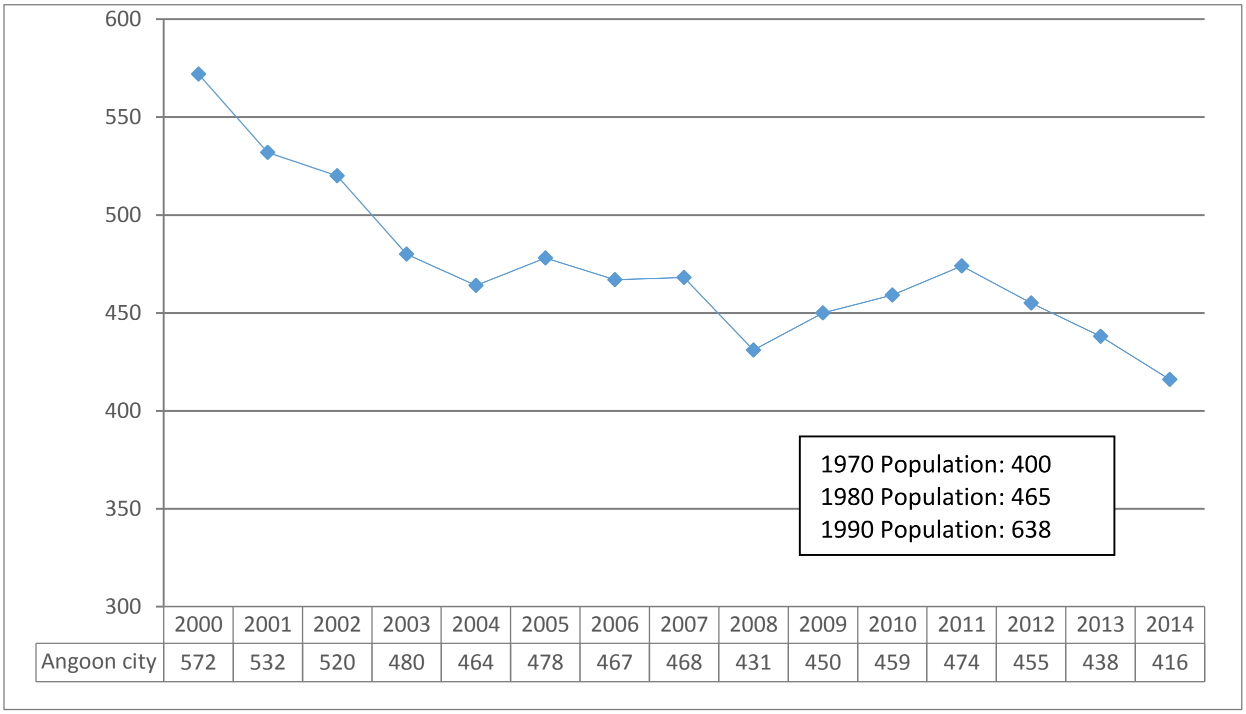
Affected Environment

Overview and Demographic Characteristics
Angoon, located on the west coast of Admiralty Island at the mouth of Kootznoowoo Inlet, has been there so long that no precise date can be established for its original occupation. In 1882, the U.S. Navy—then the only governmental authority in Alaska—shelled and burned the village of Angoon after a dispute and alleged hostage situation. The village of Angoon was left homeless. The event became known as the “1882 Bombardment of Angoon.”

As the only permanent community on Admiralty Island, Angoon had a population of about 459 in 2010. It remains a traditional Tlingit Alaska Native village with 76 percent of its population identified as Alaska Native in the 2010 Census (Table 3.23-8). Angoon has a local Fish and Game Advisory Committee; however, it is currently inactive (ADF&G 2015a).

Angoon’s population increased 37 percent between the 1970 and 1990 census. The population was, however, approximately 13 percent below the 1990 level in 2000 and continued to decline, decreasing by 27 percent between 2000 and 2014. Total estimated population was 416 in Angoon in 2014 (Figure 3.23-6).

Figure 3.23-6
Angoon Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

The general overall decline in population since 1990 has been matched by a decline in school enrollment, with the number of enrolled students decreasing from 189 in 1990 to 78 in 2014 (Table 3.23-9).

Economic Conditions

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Local government, including the Chatham School District, and other educational and health services provide the majority of employment for Angoon, followed by leisure and hospitality. In addition, commercial fishing is a major source of income for self-employed residents, and state and federal grants recently funded a new shellfish farm in the area (Himes-Cornell et al. 2013). In 2013, 15 residents held 15 commercial fishing permits (ACFEC 2015). Three of these permits were used for commercial landings for crab, halibut, and salmon.

Tourism is a growing source of seasonal work opportunities, including a destination sportfishing lodge on Killisnoo Island that employs approximately 75 seasonal employees. Logging on Prince of Wales Island also provides limited seasonal employment (Himes-Cornell et al. 2013).

An estimated 19 percent of the labor force in Angoon was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Other estimates place the unemployment rate at more than 60 percent (Alexander et al. 2010). Median household income in 2013 was $32,250, less than half of the state median of $70,760; the corresponding median for the Hoonah-Angoon Census Area (CA) was $49,545 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	14	7
Construction	7	4
Manufacturing	1	1
Trade, Transportation and Utilities	19	10
Information	1	1
Financial Activities	11	6
Professional and Business Services	1	1
Educational and Health Services	29	15
Leisure and Hospitality	20	10
State Government	1	1
Local Government	95	48
Other	0	0
Unknown	0	0
Total Employment	**199**	**100**
Source: Alaska DOL 2015d		

Angoon has some of the highest electric rates in Alaska due to the use of diesel-generated power. Residential rates for 2011 before and after the application of PCE payments were 63 cents/kWh and 23 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 63 cents/kWh. Kootznoowoo, Inc., the Alaska Native Claims Settlement Act Corporation for the City of Angoon, has proposed to develop a 1 megawatt (MW), run-of-river hydroelectric facility on Thayer Creek to replace the use of diesel generators (Table 3.12b-3).

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Angoon in their local day-to-day work, recreational, and subsistence activities is shown in Figure 3.23-7. This area contains 1,083,231 acres of NFS land (among other land ownerships). Table 3.23-10 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Angoon, ranging from about 2.1 percent (Alternative 1) to 3.4 percent (Alternative 2). Harvest activities could have localized effects if they coincide with a particular location favored by Angoon residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 5; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old growth harvest in this area (see Table 3.23-10).

Figure 3.23-7
Angoon's Community Use Area

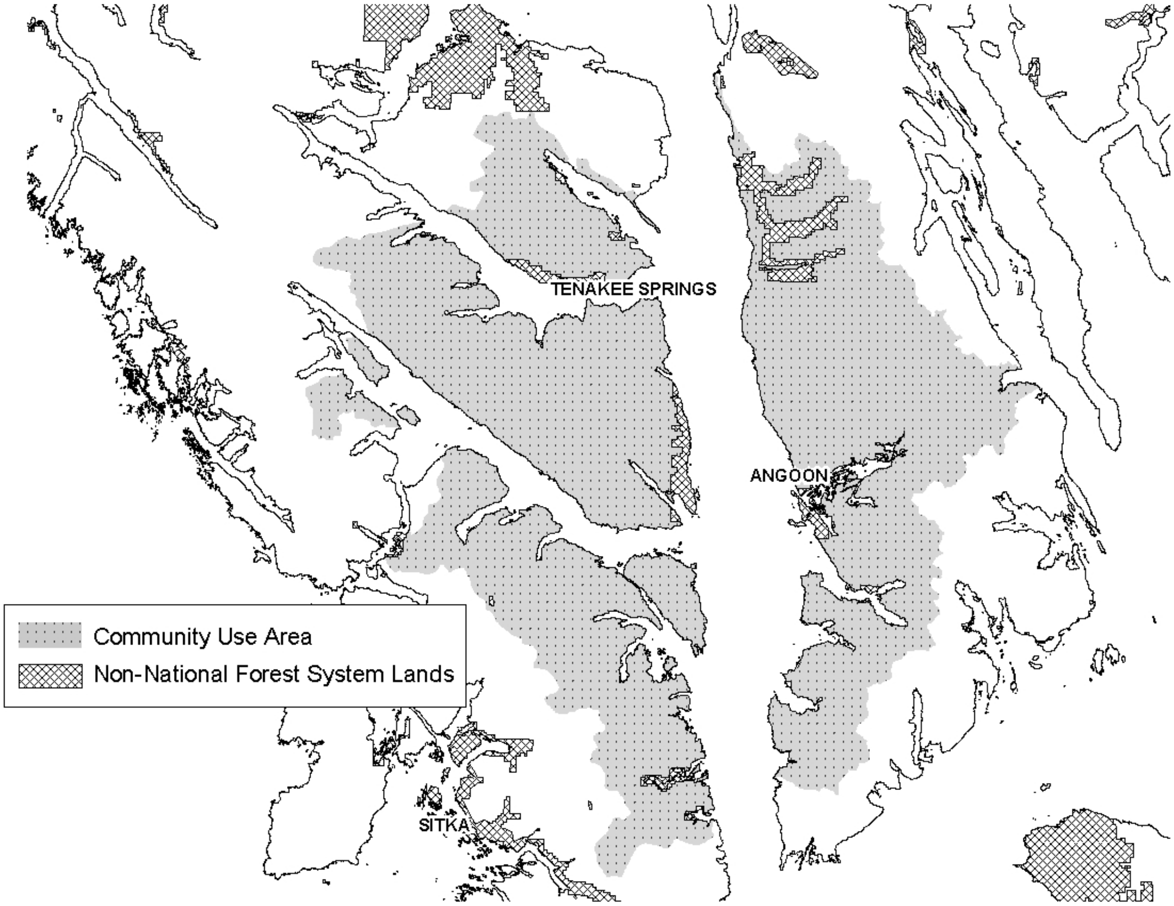


Table 3.23-10
Estimated Maximum Harvest (acres) over 100 Years in Angoon's Community Use Area by Alternative

	Alternative				
	1	2	3	4	5
Young Growth	14,533	32,637	21,931	17,743	27,582
Old Growth	8,351	3,746	3,905	5,513	5,776
Total	**22,884**	**36,384**	**25,836**	**23,255**	**33,357**
Harvest as a Percent of Total NFS Lands in the Community Use Area	2.1%	3.4%	2.4%	2.1%	3.1%

Economy

Angoon is a traditional native community. Commercial fishing and subsistence use are the primary factors influencing Angoon. For subsistence use, Admiralty and Catherine Islands are especially important to Angoon. No timber harvest would occur on the NFS land within the Angoon community use area on Admiralty Island under any of the alternatives. Employment in the commercial fishing sector is not expected to be affected under any of the alternatives.

ANILCA section 506(a)(3)(B) granted Kootznoowoo, Inc. the right to develop hydroelectric resources on Admiralty Island subject to such conditions as the Secretary of Agriculture shall prescribe for the protection of water, fishery, wildlife, recreational, and scenic values. As directed by ANILCA, the Forest Service will issue special use permits, with specified conditions, to allow construction and operation of the project under the terms of the May 2009 Record of Decision for the project.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 52 percent of the total edible pounds of subsistence resources harvested by Angoon households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates), primarily salmon, accounted for the majority (62 percent) of per capita subsistence harvest in Angoon in 2012 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 30 percent of the total edible pounds of subsistence resources harvested by Angoon households (Kruse and Frazier 1988). Deer accounted for 28 percent of per capita subsistence harvest by Angoon residents in 2012 (ADF&G 2014).

The WAAs used by Angoon residents for hunting deer lie within Game Management Unit (GMU) 4. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). Among Angoon residents, however, total annual deer harvest has fluctuated and was lower in 2013 than 2004 by about 47 percent (79 fewer deer) (ADF&G 2015b).

Angoon residents take the majority (59 percent) of their deer from three WAAs on Admiralty Island (4042, 4054, and 4055). As shown in Table 3.23-11, these three WAAs will not be affected by any of the alternatives. The next two WAAs in importance contribute 12 percent of Angoon’s deer harvest and would also not be affected under any of the alternatives. WAA 3308 would be minimally affected by Alternatives 1, 4, and 5, each decreasing deer habitat capability by one percent after 100 years. Therefore, all alternatives should be able to provide habitat capability for deer hunted by Angoon residents, as well as for all deer hunted within the WAAs, over the course of Forest Plan implementation.

Table 3.23-11
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Angoon Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

WAA	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
	Angoon Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
4042	31	32	41	100%	100%	100%	100%	100%	100%
4055	28	33	48	99%	99%	99%	99%	99%	99%
4054	18	19	21	100%	100%	100%	100%	100%	100%
3939	9	71	105	100%	100%	100%	100%	100%	100%
4041	6	16	19	91%	91%	91%	91%	91%	91%
3308	4	61	107	66%	65%	66%	66%	65%	65%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

Coffman Cove

Affected Environment

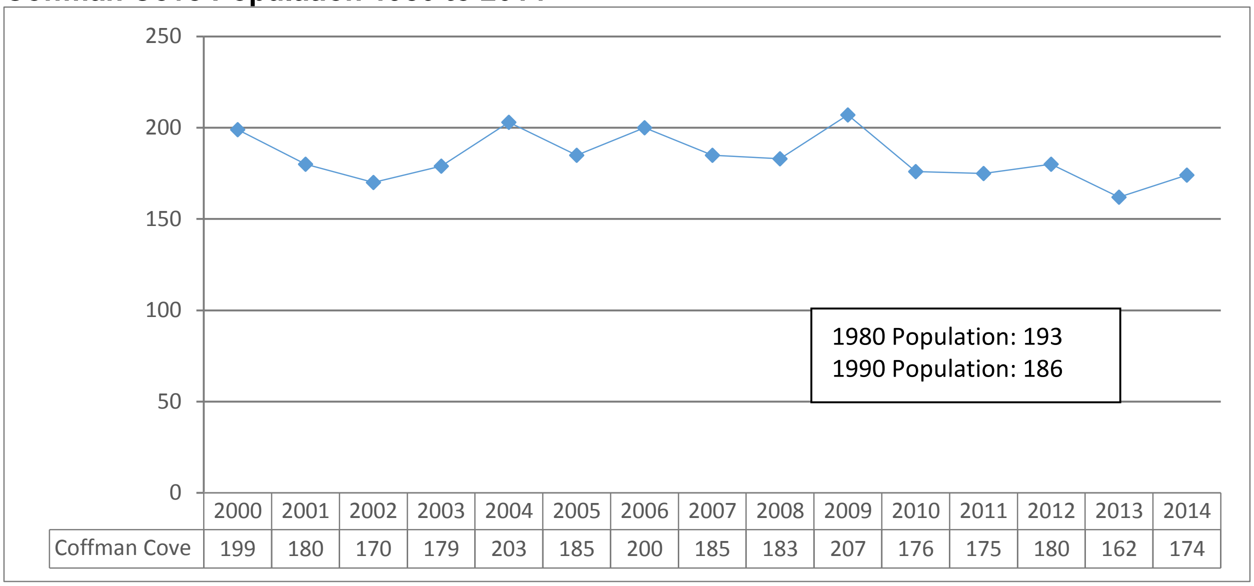
Overview and Demographic Characteristics

Coffman Cove is located on northeast Prince of Wales Island. Settlement of Coffman Cove began in 1956 with development of a logging camp. A road connecting Coffman Cove to the larger community of Craig was built in the 1980s. In 2015, the Rainforest Islands Ferry started providing ferry service four times a week between Coffman Cove, Wrangell, and Petersburg. The city was incorporated in 1989.

Population has fluctuated over recent decades, but has not declined dramatically (Figure 3.23-3). According to the 2010 Census, Coffman Cove had a population of 176, with Alaska Natives comprising 4 percent of the total (Table 3.23-8). Total estimated population was 174 in Coffman Cove in 2014 (Figure 3.23-8).

School enrollment in Coffman Cove dropped from 47 students in 1990 to just 11 students in 2010, and has since increased to 24 students (Table 3.23-9). The community has at times struggled to maintain the minimum 10 students required by Alaska state law (Alexander et al. 2010).

Figure 3.23-8
Coffman Cove Population 1980 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Construction and local government provide the majority of employment for Coffman Cove.

Logging support services historically provided the majority of employment in Coffman Cove. One of the major log transfer sites on Prince of Wales Island is located at Coffman Cove. Logging support services still provide some employment, but most employment is now recreation and tourism-based. A review of business licenses in January 2015 indicated two small sawmills remain active in the community. Tourism facilities include fishing lodges, bed and breakfast inns, apartment/bunkhouse facilities, and rental cabins, as well as fishing day charter operations (Dugan et al. 2009). Commercial fishermen also operate out of the cove and the local school system, library, general store, and gas station also provide employment, as well as services to community residents and the north part of the island. In 2013, six residents held seven commercial fishing permits, two of which were used for shellfish and salmon catches (ACFEC 2015).

An estimated 12 percent of the labor force in Coffman Cove was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $43,750, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	7	10
Construction	18	26
Manufacturing	0	0
Trade, Transportation and Utilities	7	10
Information	0	0
Financial Activities	0	0
Professional and Business Services	1	1
Educational and Health Services	4	6
Leisure and Hospitality	0	0
State Government	4	6
Local Government	29	41
Other	0	0
Unknown	0	0
Total Employment	**70**	**100**

Source: Alaska DOL 2015d

Coffman Cove is part of the AP&T system that connects the community with the communities of Craig, Hollis, Hydaburg, Kasaan, Klawock, and Thorne Bay. Electricity is diesel generated. Residential rates for 2011 before and after the application of PCE payments were 47 cents/kWh and 18 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 47 cents/kWh.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Coffman Cove in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-9. This area contains 1,228,787 acres of NFS land (among other land ownerships). Table 3.23-12 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. Total areas available for harvest range from about 8.6 percent of the Coffman Cove community use area under Alternative 1 to 11.2 percent under Alternative 2. Harvest activities could have localized effects if they coincide with areas favored by Coffman Cove residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area; as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of total potential suitable acres) would have the largest potential old-growth harvest in this area (see Table 3.23-12).

Figure 3.23-9
Coffman Cove's Community Use Area

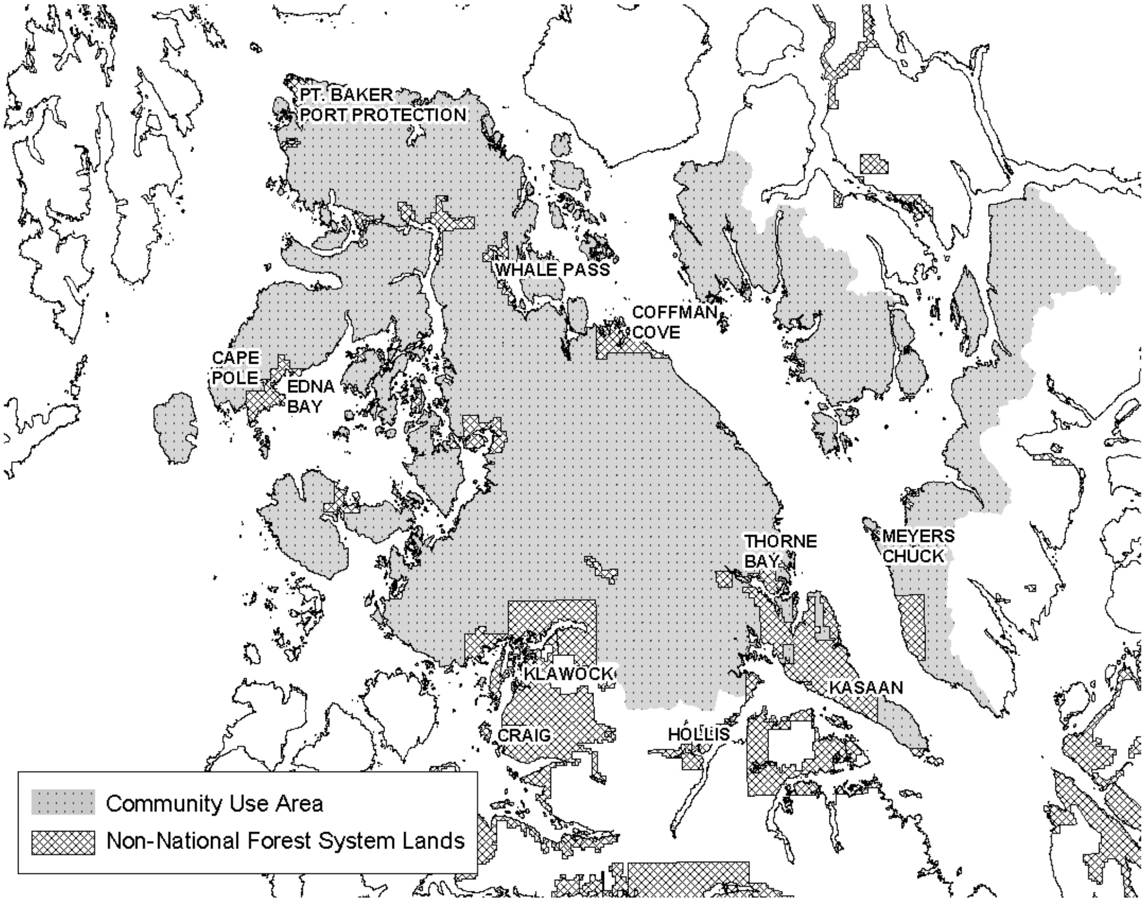


Table 3.23-12
Estimated Maximum Harvest (acres) over 100 Years in Coffman Cove's Community Use Area by Alternative

	Alternative				
	1	2	3	4	5
Young Growth	89,495	131,341	128,898	101,854	105,156
Old Growth	16,178	7,391	8,328	12,117	10,077
Total	**105,673**	**138,732**	**137,226**	**113,970**	**115,233**
Harvest as a Percent of Total NFS Lands in the Community Use Area	8.6%	11.3%	11.2%	9.3%	9.4%

Economy
Logging support services historically provided the majority of employment in Coffman Cove and still provide some employment, but most employment is now recreation and tourism-based. Timber harvest in the community use area could potentially support employment in logging support services. Recreation and tourism and commercial fishing activities are not expected to be affected by any of the alternatives.

Subsistence
No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 65 percent of the total edible pounds of subsistence resources harvested by Coffman Cove households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for the majority (71 percent) of per capita subsistence harvest in the community in 1998 (ADF&G 2014).

The 1998 TRUCS study found that deer accounted for 32 percent of the total edible pounds of subsistence resources harvested by Coffman Cove households (Kruse and Frazier 1988). Deer accounted for 20 percent of per capita subsistence harvest by Coffman Cove residents in 1998 (ADF&G 2014).

Coffman Cove residents harvest deer almost entirely on Prince of Wales Island, which is included in GMU 2. Following a deer population decline from 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Coffman Cove residents, total annual deer harvest in 2013 was about double the 2004 harvest level (72 more deer) (ADF&G 2015b).

Residents of Coffman Cove harvest the majority (70 percent) of their deer from two WAAs in the eastern half of north-central Prince of Wales Island (1420 and 1421). As shown in Table 3.23-13, the Coffman Cove portion represents about one-quarter of the total harvest and about one-third of the rural hunter harvest in these WAAs. About 38 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

All of the WAAs used by Coffman Cove residents occur in an area with substantial past timber harvest and, therefore, deer habitat capabilities are currently estimated to be considerably below 1954 levels (Table 3.23-13). Under each of the alternatives, additional harvest would occur that would reduce habitat capabilities after 100 years by a further 3 to 4 percent of 1954 levels in WAA 1420, 4 to 6 percent in WAA 1421, and 3 to 5 percent in WAA 1315 (Table 3.23-13).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives except for Alternative 7 and 9 should be able to provide sufficient habitat capability over the long term for deer hunted by Coffman Cove residents. All of the 1997 alternatives included substantially higher levels of timber harvest in Coffman Cove’s community use area than the alternatives considered in this EIS (approximately 61 to 230 percent higher). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the long term for deer hunted by Coffman Cove residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to produce deer populations sufficient to avoid effects on hunter success for all rural hunters in the long term and for all hunters in both the short and long term. This may still be the case under all current alternatives.

In summary, use of most subsistence resources by Coffman Cove residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction on hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Coffman Cove's subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Table 3.23-13
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Coffman Cove Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Coffman Cove Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1420	59	158	276	49%	45%	46%	46%	46%	45%
1421	31	76	102	68%	62%	64%	63%	63%	63%
1315	7	201	317	56%	52%	52%	53%	53%	51%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

Craig

Affected Environment

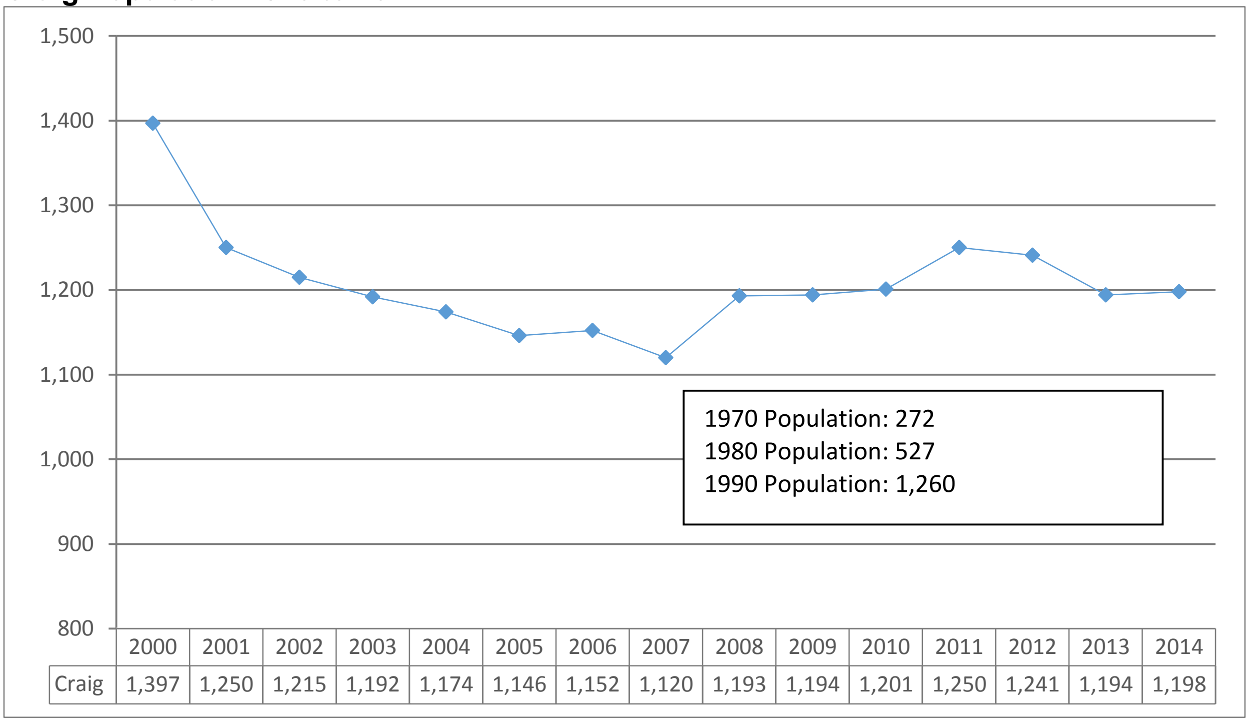
Overview and Demographic Characteristics

Craig is partially situated on an island connected to the west coast of Prince of Wales Island by a causeway and is the largest community on Prince of Wales Island. Tlingit fish camps and seasonal villages originally occupied the present location of Craig. The city is named for its contemporary founder, Craig Miller, who in 1907, with the help of local Haidas, established a saltery at Fish Egg Island.

The Forest Service established a permanent ranger station here around 1919. The City of Craig was incorporated in 1922 as a second-class city under the laws of the territory of Alaska and became a first-class city in 1973. Shaan-Seet Inc. (the village corporation established under the Alaska Native Claims Settlement Act of 1971 [ANCSA]) received an interim conveyance of 20,852 acres in 1979 (ADF&G 1994). The community has an active local Fish and Game Advisory Committee (ADF&G 2015a).

The population of Craig increased more than fivefold between 1970 and 2000 (Figure 3.23-10). According to the 2010 Census, Craig had a population of 1,201, with Alaska Natives comprising 20 percent of the total (Table 3.23-8). The total population decreased by an estimated 199 residents or 14 percent from 2000 to 2014. Total estimated population was 1,198 in Craig in 2014 (Figure 3.23-10). A total of 573 students were enrolled in the Craig City School District in 2014, down from 630 students in 2010 (Table 3.23-9).

Figure 3.23-10
Craig Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The Craig economy is primarily based on the fishing and timber industry with commercial fishing, fish processing, logging, sawmill operations, government and retail/wholesale businesses providing the majority of employment. Columbia Ward Fisheries, a fish buying station, and a major cold storage plant are located in Craig and 145 residents hold commercial fishing permits (ACFEC 2015). Estimated gross fishing earnings of local residents reached nearly $11 million in 2013. The Viking Lumber sawmill, St. Nick Forest Products, and one smaller sawmill are located near Craig. According to the 2013 mill survey conducted for the USDA Forest Service, the Viking Lumber mill, which has an installed production capacity of 80 million board feet (MMBF), processed approximately 15 MMBF in 2013 and employed 34 people (Parrent and Grewe 2014). Shaan-Seet Village Corporation timber operations is also a major employer of local residents.

As Craig has grown as a regional center for Prince of Wales Island communities, employment opportunities in tourism and service-related industries have also increased (Himes-Cornell et al. 2013). Most visitors come to Craig for sport fishing and other recreational boating. There are also a number of fishing lodges in and near town, as well independent operators offering package trips that include guided fishing, meals, and lodging (Cerveny 2005; Dugan et al. 2009). A field study of nature-based tourism in Southeast Alaska found that during the summer of 2007, Craig had 2,592 visitors bringing in approximately $6.4 million in revenue (Dugan et al. 2009).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. An estimated 10 percent of the labor force in Craig was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $45,298, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Craig is part of the AP&T system that connects the community with the communities of Coffman Cove, Hollis, Hydaburg, Kasaan, Klawock, and Thorne Bay. Electricity is diesel generated. Residential rates for 2011 before and after the application of PCE payments were 24 cents/kWh and 16 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 24 cents/kWh.

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	39	7
Construction	45	8
Manufacturing	29	5
Trade, Transportation and Utilities	139	26
Information	1	< 1
Financial Activities	12	2
Professional and Business Services	23	4
Educational and Health Services	46	9
Leisure and Hospitality	47	9
State Government	18	3
Local Government	128	24
Other	9	1
Unknown	0	0
Total Employment	**536**	**100**

Source: Alaska DOL 2015d

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Craig in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-11. This area contains 766,933 acres of NFS land (among other land ownerships). Table 3.23-14 shows the estimated maximum acres of young-growth and old-growth potentially available for harvest by alternative. Total areas available for harvest range from about 7.3 percent of the Craig community use area under Alternative 1 to 9.6 percent under Alternative 2. Harvest activities could have localized effects if they coincide with a particular area favored by Craig residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old growth harvest in this area (see Table 3.23-14).

Economy

Craig is primarily a commercial fishing, retail trade, and timber community. It is most likely to be affected by changes in timber employment, commercial fishing, and retail services. Viking Lumber, the largest and most modern sawmill in the region, is located between Craig and Klawock. The alternatives would all supply old-growth volume to support operations at Viking Lumber in the short-term, but the amount of old-growth timber available for sale would decrease over time, as the Forest Service completes the transition to young-growth. The speed of the transition and the relative and absolute volumes of young-growth would vary by alternative as discussed in the *Regional and National Economy* section, above.

Several small timber operators produce value-added products in Craig. These value added products include music wood, cabinets, and other products. These operators process relatively low volumes of timber, but require specific species and grades to meet their needs. All alternatives would supply old-growth volume (5 MMBF) to support the small operators in Southeast Alaska, including those located in and and around Craig.

Employment in the commercial fishing sector is not expected to be affected under any of the alternatives.

Figure 3.23-11
Craig's Community Use Area

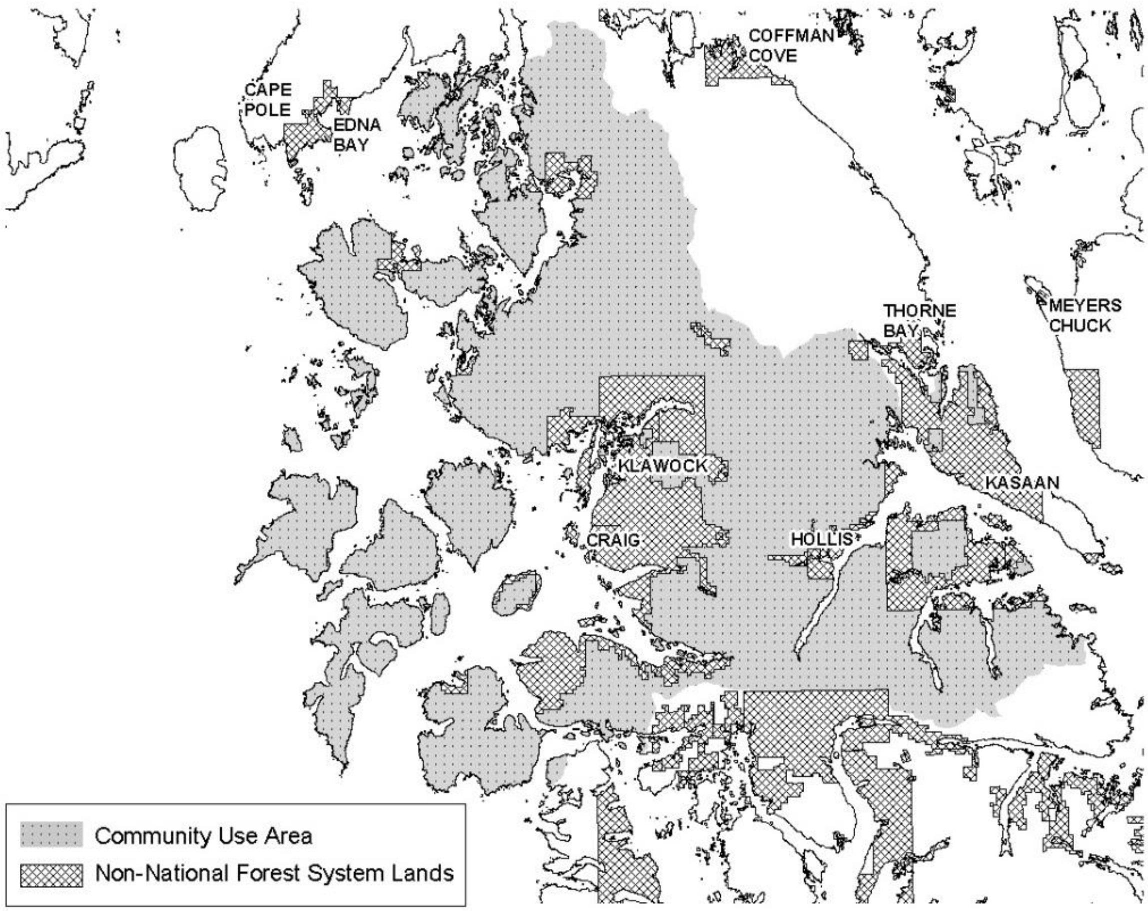


Table 3.23-14
Estimated Maximum Harvest (acres) over 100 Years in Craig's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	46,810	69,194	67,335	55,276	55,694
Old Growth	9,558	4,602	5,300	7,649	6,362
Total	**56,368**	**73,796**	**72,635**	**62,925**	**62,056**
Harvest as a Percent of Total NFS Lands in the Community Use Area	7.3%	9.6%	9.5%	8.2%	8.1%

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 70 percent of the total edible pounds of subsistence resources harvested by Craig households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 67 percent of per capita subsistence harvest in Craig in 1997 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 22 percent of the total edible pounds of subsistence resources harvested by Craig households (Kruse and Frazier 1988). Deer accounted for 19 percent of per capita subsistence harvest by Craig residents in 1997 (ADF&G 2014).

Craig residents harvest deer almost entirely on Prince of Wales and adjacent islands, which are included in GMU 2. Following a deer population decline 2006-2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Craig residents, total annual deer harvest in 2013 was about double the 2004 harvest level (380 more deer) (ADF&G 2015b).

Deer harvest by Craig residents is spread over many WAAs, but the majority (55 percent) of their deer are harvested from six WAAs in central and northern Prince of Wales Island (the top six WAAs in Table 3.23-15). The Craig portion of the harvest in these six WAAs represents about one-third of the total harvest and about one-half of the rural hunter harvest (Table 3.23-15). About 32 percent of the combined harvest in these WAAs is by non-rural hunters, indicating that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

The majority of the WAAs used heavily by Craig residents are in areas with substantial past timber harvest and deer habitat capabilities are currently estimated to be below 1954 levels (Table 3.23-15). Under each of the alternatives, additional harvest would reduce habitat capabilities by 1 to 8 percent after 100 years, except for two WAAs where there would be no effect (0902 and 1107). Reductions would be broadly similar across all alternatives.

Table 3.23-15
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Craig Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Craig Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1422	106	247	383	57%	49%	52%	51%	51%	51%
1318	70	159	198	90%	83%	85%	85%	85%	85%
1214	60	120	235	77%	70%	72%	72%	72%	71%
1332	56	67	76	88%	87%	88%	88%	87%	88%
0902	55	65	82	100%	100%	100%	100%	100%	100%
1317	51	93	133	58%	56%	56%	56%	57%	57%
0901	43	56	66	95%	89%	91%	92%	91%	90%
1319	40	169	226	74%	68%	68%	70%	70%	70%
1107	30	99	130	99%	99%	99%	99%	99%	99%
1315	29	201	317	56%	52%	52%	53%	53%	51%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 Alternatives should be able to provide sufficient habitat capability in both the short and long terms for deer hunted by Craig residents. All of the 1997 Alternatives included substantially higher levels of timber harvest in Craig's community use area than the alternatives considered in this EIS (approximately 107 to 325 percent higher). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability for deer hunted by Craig residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to produce deer populations sufficient to avoid effects on hunter success for all rural hunters in the long term and for all hunters in both the short and long terms. This may still be the case under all current alternatives.

In summary, use of most subsistence resources by Craig residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Craig's subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Edna Bay

Affected Environment

Overview and Demographic Characteristics

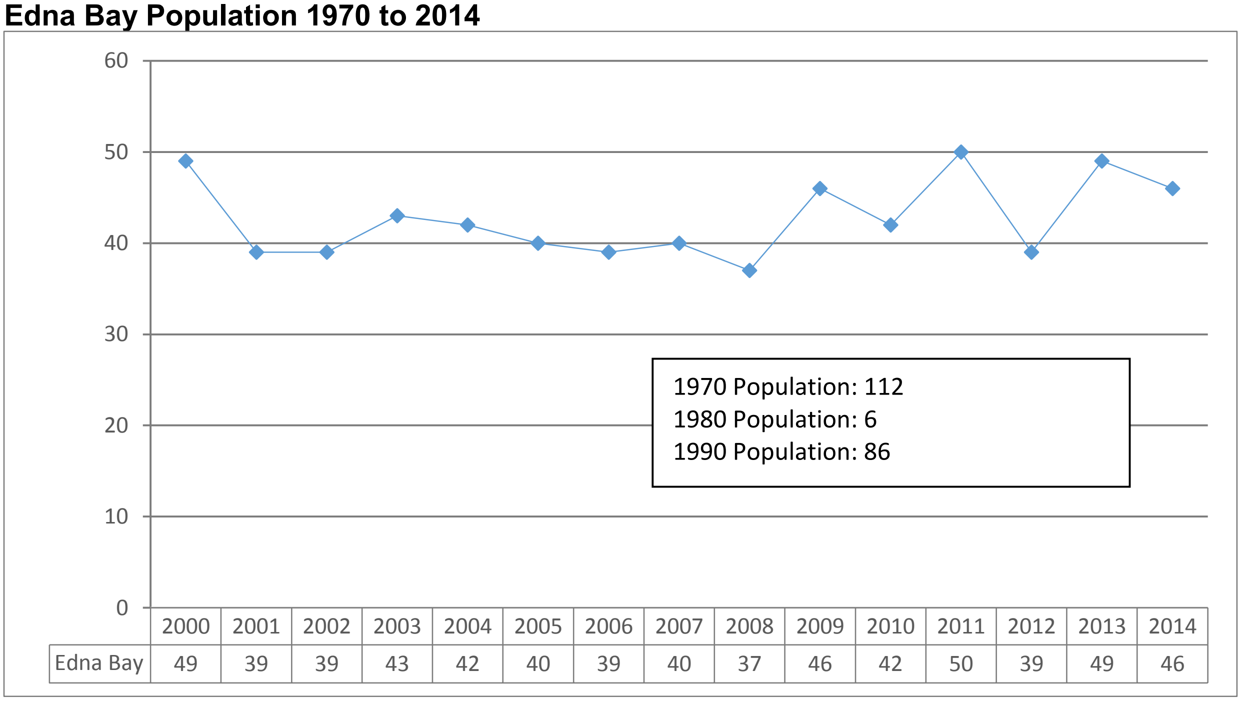
Edna Bay is located on southeast Kosciusko Island, west of Prince of Wales Island, and north of Sea Otter Sound. Originally, Tlingit Indians from west Prince of Wales Island used Edna Bay on a seasonal basis. In 1943, a logging camp was established when the demand for aircraft-quality spruce was high. The camp closed in the late 1960s and the buildings were burned and the site cleaned. In 1977, the State selected part of the Tongass National Forest at Edna

Bay, with the USDA Forest Service reserving two administrative sites. In 1982, the State sold several lots around Edna Bay to private landowners. A small community developed as families, mainly those involved in commercial fishing, moved to Edna Bay. A school was constructed and a road connecting dispersed segments of the community was completed (ADF&G 1994).

Edna Bay remains an unincorporated city. The community has an active local Fish and Game Advisory Committee and has shown a strong commitment to protecting local commercial fishing and subsistence resources (ADF&G 1994, 2015). Edna Bay is accessible by water or by float plane from Ketchikan. Most households own skiffs for transportation around the bay and to other near shore areas not accessible by road (ADF&G 1994).

Edna Bay's population fluctuated a great deal between 1970 and 1990, primarily due to the transition away from timber harvesting as a main economic activity (Himes-Cornell et al. 2013). By 2000, the population had decreased again, by about 40 percent, and has since remained relatively consistant (Figure 3.23-12). According to the 2010 Census, Edna Bay had a population of 42, with no Alaska Native population (Table 3.23-8). Total estimated population was 46 in Edna Bay in 2014 (Figure 3.23-12). The Edna Bay School has struggled to maintain the required minimum of 10 students and was not open in 2014 (Table 3.23-9).

Figure 3.23-12
Edna Bay Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Edna Bay is characterized by its fishing and subsistence culture (Himes-Cornell et al. 2013). The majority of employment in Edna Bay is provided by commercial fishing, construction, the local school district, and one local sawmill. Many residents are self-employed (Himes-Cornell et al. 2013). In 2013, 11 residents held commercial fishing licences, primarily used for halibut and salmon. Estimated gross income for these two fisheries that year was over $115,000 (ACFEC 2015).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Due to method limitations of the ACS, no data were available for the 2013 unemployment rate or median household income. State data indicate that there were seven unemployment insurance claimants in 2013, and annual wages among workers ranged from under $5,000 (4 residents) to over $50,000 (5 residents) (Alaska DOL 2015f).

Edna Bay has no central utility system and residents rely upon individual generators.

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	2	13
Construction	4	27
Manufacturing	2	13
Trade, Transportation and Utilities	0	0
Information	1	7
Financial Activities	0	0
Professional and Business Services	0	0
Educational and Health Services	1	7
Leisure and Hospitality	0	0
State Government	0	0
Local Government	5	33
Other	0	0
Unknown	0	0
Total Employment	**15**	**100**

Source: Alaska DOL 2015d

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Edna Bay in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-13. This area contains 665,386 acres of NFS land (among other land ownerships). Table 3.23-16 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. Total areas available for harvest range from about 7.5 percent of the Edna Bay community use area under Alternative 1 to 10.0 percent under Alternatives 2 and 3. Harvest activities could have localized effects if they coincide with an area favored by Edna Bay residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old growth harvest in this area (see Table 3.23-16).

Economy

Edna Bay is primarily a commercial fishing and subsistence community. Employment in the commercial fishing sector is not expected to be affected under any of the alternatives.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources accounted for 59 percent of the total edible pounds of subsistence resources harvested by Edna Bay households based on the 1998 TRUCS study (Kruse and Frazier

1988). Marine resources (fish and marine invertebrates) accounted for 67 percent of per capita subsistence harvest in Edna Bay in 1998 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 21 percent of the total edible pounds of subsistence resources harvested by Edna Bay households (Kruse and Frazier 1988). Deer accounted for 23 percent of per capita subsistence harvest by Edna Bay residents in 1998 (ADF&G 2014).

Four WAAs have been identified as most important to Edna Bay residents for deer harvest (Table 3.23-17). About 68 percent of Edna Bay's harvest is derived from the first two WAAs, which are included in GMU 2. Following a deer population decline from 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Edna Bay residents, total annual deer harvest was 36 percent higher (9 more deer) in 2013 than in 2004 (ADF&G 2015b).

Residents of Edna Bay are responsible for the majority (79 percent) of the deer harvested on Kosciusko Island (WAA 1525), but only a small portion of the deer harvested on Heceta Island (WAA 1003) and in other WAAs. As shown in Table 3.23-17, the Edna Bay portion represents about 8 percent of the total harvest and about 11 percent of the rural hunter harvest in these WAAs. About 23 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

Figure 3.23-13
Edna Bay's Community Use Area

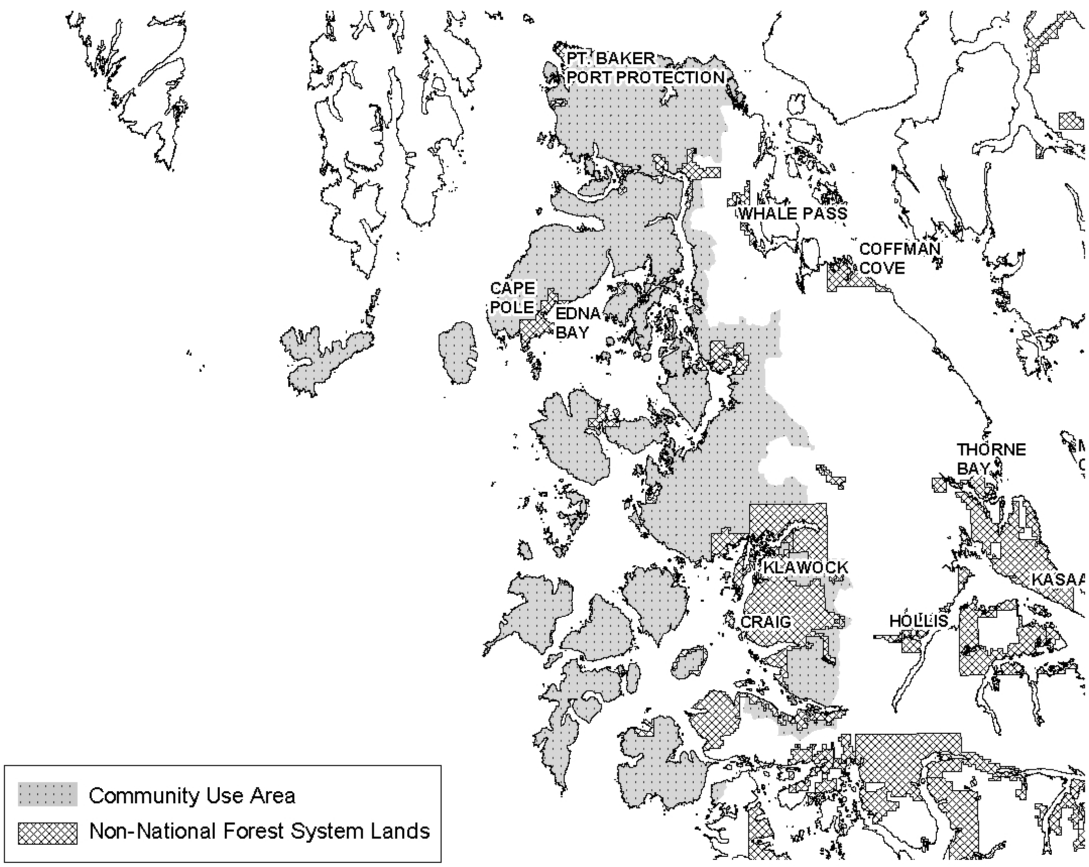


Table 3.23-16
Estimated Maximum Harvest (acres) over 100 Years in Edna Bay's Community Use Area by Alternative

	Alternative				
	1	2	3	4	5
Young Growth	41,674	63,104	62,447	49,677	49,427
Old Growth	8,156	3,656	4,349	6,322	5,258
Total	**49,830**	**66,760**	**66,796**	**55,999**	**54,685**
Harvest as a Percent of Total NFS Lands in the Community Use Area	7.5%	10.0%	10.0%	8.4%	8.2%

Table 3.23-17
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Edna Bay Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013[2]			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Edna Bay Residents	All Rural Hunters[3]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1525	18	18	18	59%	58%	59%	58%	57%	57%
1003	3	28	44	59%	54%	58%	56%	54%	54%
1318	1	159	198	90%	83%	85%	85%	85%	85%
1526	1	9	18	91%	91%	91%	91%	91%	91%

[1] Calculated based on harvest where location is known.
[2] 2004 and 2006 data not available for Edna Bay residents.
[3] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding Juneau and Ketchikan.

The two WAAs used most heavily by Edna Bay residents are in areas with substantial past timber harvest and deer habitat capabilities are currently estimated to be considerably below 1954 levels (Table 3.23-17). The next two important WAAs have been less affected by past harvest, though are still under 1954 levels. Under each of the alternatives, additional harvest would further reduce habitat capabilities in three of the four WAAs, by one to seven percent (Table 3.23-17). Reductions would be broadly similar across alternatives.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all of the alternatives should be able to provide habitat capability for deer hunted by Edna Bay residents, all rural hunters, and all hunters, within the WAAs where Edna Bay hunters derive most of their deer harvest. As all of the 1997 alternatives proposed substantially higher levels of harvest in Edna Bay's community use area (approximately 95 to 318 percent higher) than currently under consideration, all alternatives in this EIS should be able to provide habitat capability for deer hunted by Edna Bay residents, as well as for all deer hunted within the WAAs.

In summary, use of most subsistence resources by Edna Bay residents (fish and marine resources) is not expected to be affected under any of the alternatives. In addition, subsistence use of deer by Edna Bay households is unlikely to be directly affected by any of the alternatives. Future young-growth management (e.g., thinning) would further reduce the potential for effects on local hunters. It is possible, however, that additional timber harvest throughout Prince of Wales and adjacent islands would create increased competition for deer within Edna Bay's subsistence use areas if hunters from other communities were displaced due to timber harvest activity. These impacts are estimated to be relatively minor based on the limited accessibility of these island areas to non-local hunters.

Elfin Cove

Affected Environment

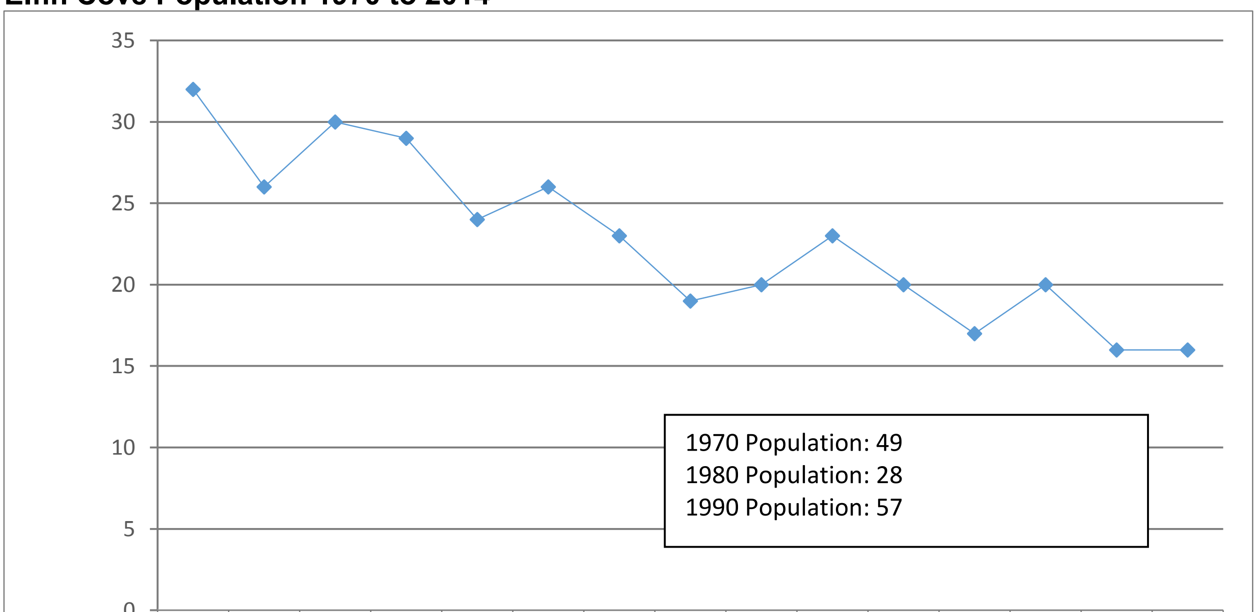
Overview and Demographic Characteristics

Elfin Cove is an unincorporated small fishing town located on northwest Chichagof Island, accessible by floatplane from Juneau. Prior to its development as a community, Native Tlingit groups, now based largely in Hoonah, used the Elfin Cove area for hunting, fishing, and gathering, as well as a safe harbor.

A fish buyer established a business here in 1927. The opening of a cold storage plant at Pelican, less than 20 miles from Elfin Cove in Lisianski Inlet, meant that fish no longer had to be hauled all the way to Juneau. Today, the cove still serves as a key stopover and supply center for fishermen and the year-round community is made up largely of fishing households. The community has a local Fish and Game Advisory Committee, however it is currently inactive (ADF&G 2015a).

The population fluctuated between 1970 and 1990, and has since been in decline (Figure 3.23-14). According to the 2010 Census, Elfin Cove had a population of 20, one of whom was an Alaska Native (Table 3.23-8). As of 2014, an estimated 16 residents live in Elfin Cove (Figure 3.23-14). The school closed in 1999 and any school age children resident in the community are homeschooled (Alexander et al. 2010).

Figure 3.23-14
Elfin Cove Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Elfin Cove	32	26	30	29	24	26	23	19	20	23	20	17	20	16	16

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The economy of Elfin Cove is highly seasonal and primarily based on the fishing industry. It is a fish buying and supply center for fishermen and residents participate in commercial fishing, sport fishing, and charter services (Himes-Cornell et al. 2013). In 2013, there were 24 commercial fishing permit holders who self-identified as Elfin Cove residents[2], earning an estimated gross $1.6 million primarily from salmon and halibut fisheries (ACFEC 2015). No timber resources are harvested commercially in the area (Himes-Cornell et al. 2013).

A study of nature-based tourism in Southeast Alaska found that although Elfin Cove had been dependent on the commercial fishing industry for decades, the focus of the town's economy has shifted toward tourism and sportfishing (Dugan et al. 2009). In 2005, 1,528 people visited Elfin Cove bringing in nearly $5 million in revenue. This study also found that the community's population ranged from 12 in the winter to 200 in the summer, with much of the summer increase associated with employment in nine sport fishing lodges. The study estimated that 54 people, almost all non-residents, were employed by these lodges during the summer. Small cruise ships, mostly carrying 60 to 70 passengers, dock at Elfin Cove, with 30 dockings in 2005 (Dugan et al. 2009). Permanent residents have noted that the community does not benefit to the extent it could if more tourism businesses were owned and operated by locals (Himes-Cornell et al. 2013).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Approximately 32 percent of the labor force in Elfin Cove was identified as unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $43,125, compared to the state median of $70,760; the corresponding median for the Hoonah-Angoon CA was $49,545 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	**Number**	**Percent of Total**
Natural Resources and Mining	0	0
Construction	0	0
Manufacturing	0	0
Trade, Transportation and Utilities	10	71
Information	0	0
Financial Activities	0	0
Professional and Business Services	0	0
Educational and Health Services	0	0
Leisure and Hospitality	0	0
State Government	3	21
Local Government	1	7
Other	0	0
Unknown	0	0
Total Employment	**14**	**100**

Source: Alaska DOL 2015d

Elfin Cove has a central electric utility system that relies on diesel generation with the highest electric rates in the region. Residential rates for 2011 before and after the application of PCE payments were 75 cents/kWh and 36 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 75 cents/kWh and 73 cents/kWh, respectively. The Community of Elfin Cove filed a Notice of Intent to File a License Application

[2] The permit holders' city of residence is as reported on ACFEC licensing forms. It is likely that people living in remote areas in the vicinity of Elfin Cove also list it as their city of residence (or have a Post Office box in town).

for the Crooked Creek and Jim's Lake Hydroelectric Project with the Federal Energy Regulatory Commision in February 2015. The proposed project located about one mile from the community would have an installed capacity of 10 MW or less. The project site is located in a Semi-Remote Recreation LUD and Inventoried Roadless Area 311.

Potential Effects

Community Use Area

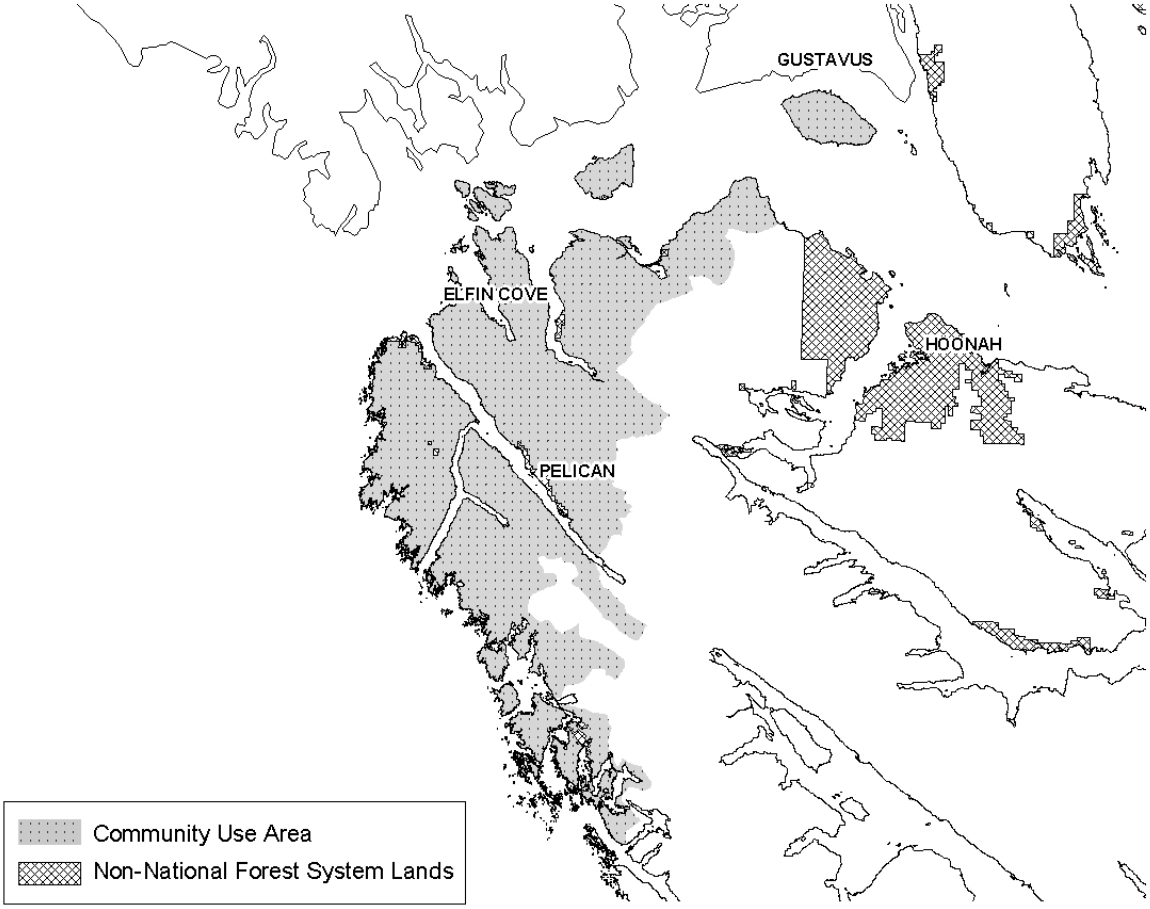
The general area commonly used or related to by many of the residents of Elfin Cove in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-15. This area contains 357,385 acres of NFS land (among other land ownerships). No young-growth or old-growth harvest is projected to take place in the community use area for Elifin Cove over the next 100 years under any alternative; therefore no timber-harvest-related effects to this area are expected.

Economy

Commercial fishing, recreation and tourism, and subsistence use are important to Elfin Cove. The acreage in the Elfin Cove community use area is either Wilderness or natural setting LUD allocations. Local timber harvest is not a significant part of the local economy. Employment in the commercial fishing sector is not expected to be affected under any of the alternatives. Tourism, especially sportfishing, is becoming increasingly important to Elfin Cove. A number of lodges operate out of the community. Recreation and tourism based on sportfishing is expected to increase by the same amount under all of the alternatives.

The proposed Crooked Creek and Jim's Lake Hydroelectric Project is located in a Semi-Remote Recreation LUD and Inventoried Roadless Area 311. Semi-Remote Recreation is considered a Transportation and Utility System (TUS) "window" under the 2008 Forest Plan, an area potentially available for the location of transportation or utility corridors and sites. This classification and the standards and guidelines in the current Forest Plan would continue to apply under Alternative 1. Under Alternatives 2 through 5, energy projects would be managed under theRenewable Energy Plan Components identified in Chapter 5 of the proposed Forest Plan amendment.

Figure 3.23-15
Elfin Cove's Community Use Area



Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources accounted for 63 percent of the total edible pounds of subsistence resources harvested by Elfin Cove households based on the 1988 TRUCS study (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 62 percent of per capita subsistence harvest in Elfin Cove in 1987 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 27 percent of the total edible pounds of subsistence resources harvested by Elfin Cove households (Kruse and Frazier 1988). Deer accounted for 28 percent of per capita subsistence harvest by Elfin Cove residents in 1987 (ADF&G 2014).

The WAAs used by Elfin Cove residents for hunting deer lie within GMU 4. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). However, deer harvest by Elfin Cove residents has generally declined over the past decade, with about 51 percent lower total annual harvest (or 20 fewer deer) in 2013 than in 2004 (ADF&G 2015b).

Elfin Cove residents take the majority (82 percent) of their deer from two WAAs (3421 and 3420). As shown in Table 3.23-18, these WAAs would not be affected by any of the alternatives as no timber harvest is proposed in these areas. It is also unlikely that Elfin Cove residents would be affected by increased competition because of the limited access and the lack of activities under the alternatives in this area.

Table 3.23-18
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Elfin Cove Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Elfin Cove Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
3421	13	42	66	100%	101%	101%	101%	101%	101%
3420	2	19	52	100%	100%	100%	100%	100%	100%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

Gustavus

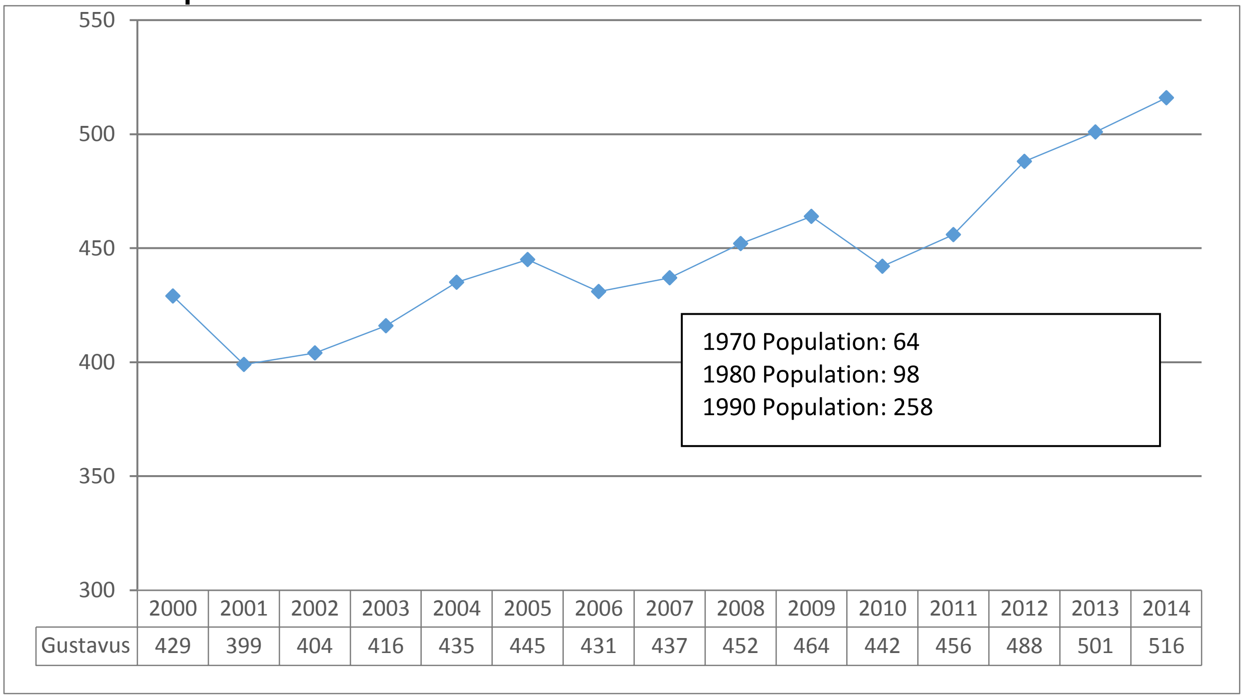
Affected Environment

Overview and Demographic Characteristics
Gustavus is located in northern Southeast Alaska on the north shore of Icy Straits, east of the entrance to Glacier Bay. Prior to the founding of the present community, Huna Tlingit used the land and resources in the immediate vicinity of the community site. Use of a salmon camp near the mouth of the Salmon River was noted by early Gustavus settlers; however, after a short period of settlement by the new community, the Huna Tlingit generally discontinued use of the camp (ADF&G 1994).

Gustavus was settled and named "Strawberry Point" in 1914 by a small group of immigrants from the lower 48 planning to develop the land as agricultural homesteads. World War II brought development to Gustavus in the form of an airstrip and Federal Aviation Administration communications facilities. Nearby Glacier Bay National Monument was established in 1925, and became a National Park in 1980 (ADF&G 1994; Himes-Cornell et al. 2013). The City of Gustavus was incorporated as a second-class city in 2004.

The population of Gustavus quadrupled between 1970 and 1990 (primarily after the establishment of the National Park), and increased by 66 percent between 1990 and 2000 (Figure 3.23-16). The community has continued to grow since 2000, with an estimated total population of 516 in 2014 (Alaska DOL 2015b). According to the 2010 Census, Alaska Natives comprised 3 percent of the total population (Table 3.23-8). A total of 65 students were enrolled in the Gustavus School in 2014, up from 48 students in 2000 (Table 3.23-9).

Figure 3.23-16
Gustavus Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Gustavus is known as a “Gateway to Glacier Bay National Park,” which contributes to its highly seasonal local economy (Himes-Cornell et al. 2013). The park and its lodge attract tourists and recreation enthusiasts during the summer months with the population doubling during the visitor season. Gustavus has many seasonal homes for residents of Juneau (Alexander et al. 2010).

In 2013, 35 residents held commercial fishing permits and earned an estimated gross $1.3 million from salmon and halibut fisheries (ACFEC 2015). In addition, many local residents practice subsistence harvest (Himes-Cornell et al. 2013). Several lodges and bed and breakfasts, an airport, school, small businesses, and the Park Service are primary employers of local residents (Himes-Cornell et al. 2013).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Approximately 7 percent of the labor force in Gustavus was identified as unemployed and seeking work in 2010, similar to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $52,188, compared to the state median of $70,760; the corresponding median for the Hoonah-Angoon CA was $49,545 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	4	3
Construction	18	12
Manufacturing	0	0
Trade, Transportation and Utilities	51	34
Information	1	1
Financial Activities	3	2
Professional and Business Services	3	2
Educational and Health Services	6	4

Employment by Industry in 2013	Number	Percent of Total
Leisure and Hospitality	13	9
State Government	11	7
Local Government	32	22
Other	2	1
Unknown	5	3
Total Employment	**149**	**100**
Source: Alaska DOL 2015d		

The Gustavus Electric Company provides electricity to Gustavus, operating a diesel powerhouse, with electricity also generated by the Falls Creek Hydroelectric Facility, which was completed in 2009. Residential rates for 2011 before and after the application of PCE payments were 45 cents/kWh and 28 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 45 cents/kWh.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Gustavus in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-17. This area contains 480,541 acres of NFS land (among other land ownerships). Table 3.23-19 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest areas represent a small portion of the community use area for Gustavus, ranging from 1.2 percent (Alternative 4) to 2.4 percent (Alternative 2). Harvest activities could have localized effects if they coincide with an area favored by Gustavus residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 5; however, it may be noted that Alternative 1 (which would have less potential total suitable harvest compared to Alternatives 2 and 5) would have the largest potential old growth harvest in this area (see Table 3.23-19).

Economy

Gustavus is a small community located near Glacier Bay National Park. Recreation and tourism are important to Gustavus, especially in relation to use of the National Park. Commercial fishing and subsistence use are also important to the community. These uses are not expected to be affected under any of the alternatives.

Figure 3.23-17
Gustavus' Community Use Area

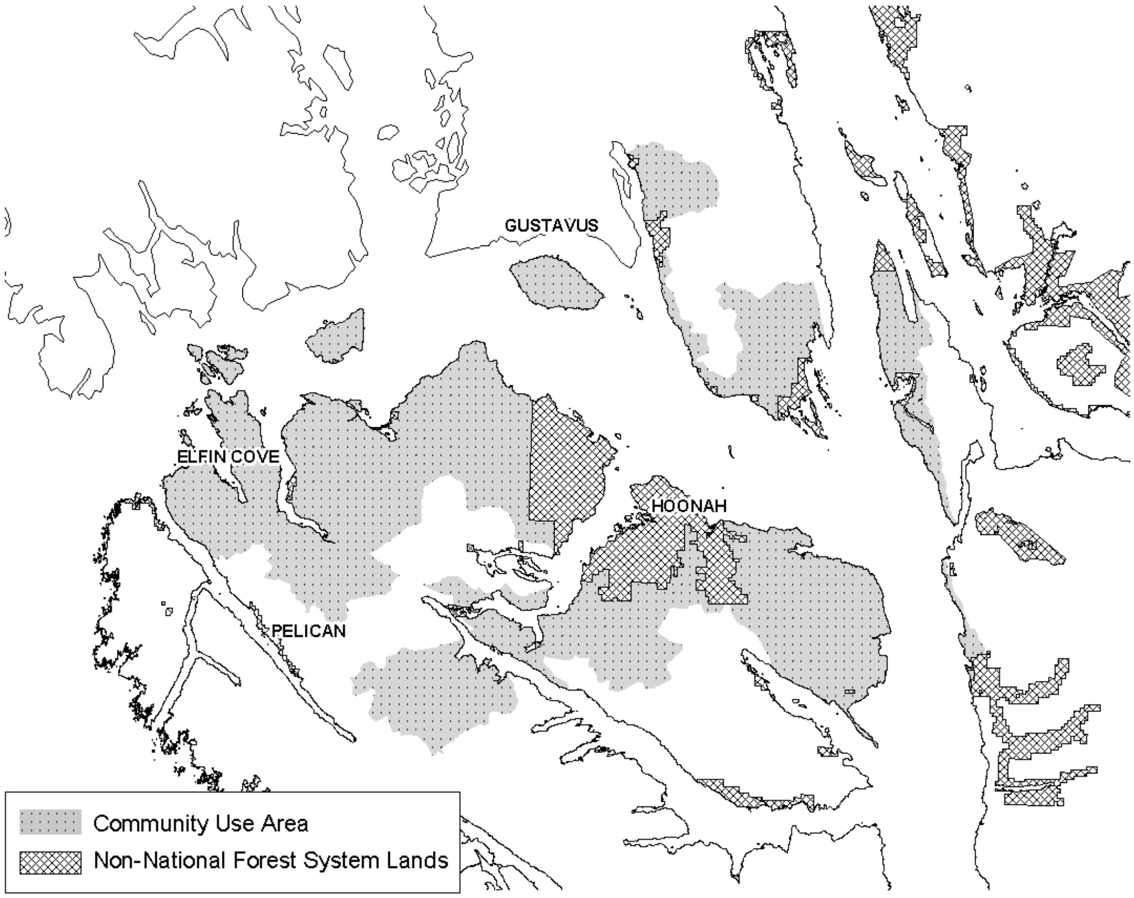


Table 3.23-19
Estimated Maximum Harvest (acres) over 100 Years in Gustavus' Community Use Area by Alternative

	Alternative				
	1	2	3	4	5
Young Growth	3,818	10,187	7,443	3,705	8,739
Old Growth	3,158	1,417	1,614	2,152	2,184
Total	**6,976**	**11,604**	**9,057**	**5,857**	**10,923**
Harvest as a Percent of Total NFS Lands in the Community Use Area	1.5%	2.4%	1.9%	1.2%	2.3%

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. Marine resources (fish and marine invertebrates) accounted for 69 percent of per capita subsistence harvest in Gustavus in 1987 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 70 percent of the total edible pounds of subsistence resources harvested by Gustavus households (Kruse and Frazier 1988). Deer accounted for 27 percent of per capita subsistence harvest by Gustavus residents in 1987 (ADF&G 2014).

The primary WAAs used by Gustavus residents for hunting deer lie within GMU 4. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). Among Gustavus residents, total annual deer harvest appears to have followed a corresponding pattern, with a dip following 2006 and increasing in recent years. In 2013, total annual deer harvest by Gustavus residents was 23 percent higher (19 more deer) than in 2004 (ADF&G 2015b).

Gustavus residents take the majority (73 percent) of their deer from two WAAs on northern Chichagof Island and Pleasant, Lemesurier, and Inian Islands (4256 and 4222). As shown in Table 3.23-20, WAA 4256, which provides over half of Gustavus' harvest, would not be affected by any of the alternatives because it is in wilderness. WAA 4222 would be affected by timber harvest, further reducing habitat capability by one percent under all alternatives (Table 3.23-20).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all of the alternatives should be able to provide habitat capability for deer hunted by Gustavus residents, all rural hunters, and all hunters within the WAAs where Gustavus hunters derive most of their deer harvest in the short term. In the long term, sufficient habitat would be provided for Gustavus residents and all rural hunters, but not for all hunters. The predicted deficit for all hunters in the long term would be a natural condition, but would occur earlier with timber harvest in the area. All 1997 alternatives included substantially higher levels of timber harvest in Gustavus' community use area than the alternatives considered in this EIS (over twice to 16 times as high). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability for Gustavus residents and all rural hunters, though all hunters may still face a deficit depending on how conditions change independent from proposed timber harvest. This may lead to some restriction in hunting by non-rural hunters over the long term.

Table 3.23-20
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Gustavus Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1/]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Gustavus Residents	All Rural Hunters[2/]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
4256	47	52	68	100%	100%	100%	100%	100%	100%
4222	10	32	44	97%	96%	96%	96%	96%	96%

[1/]Calculated based on harvest where location is known.
[2/]The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

In summary, use of most subsistence resources (fish and marine invertebrates) by Gustavus residents is not expected to be affected under any of the alternatives. In addition, while subsistence use of deer by Gustavus households is not likely to be affected, overall subsistence use of deer in the primary WAAs used by Gustavus residents may be slightly affected to the point that some restriction in hunting by non-rural hunters might be necessary over the long term, under all alternatives. It is also unlikely that Gustavus residents would be affected by increased competition because of the limited access and the lack of activities under the alternatives in this area.

Haines

Affected Environment

Overview and Demographic Characteristics

Haines is located in the northern portion of Southeast Alaska, near the north end of Lynn Canal on the Chilkat Peninsula. Haines is one of three Southeast communities connected by road to Canada. According to the 2010 Census, Haines had a population of 1,713 with Alaska Natives comprising 11 percent of the total (U.S. Census Bureau 2011).

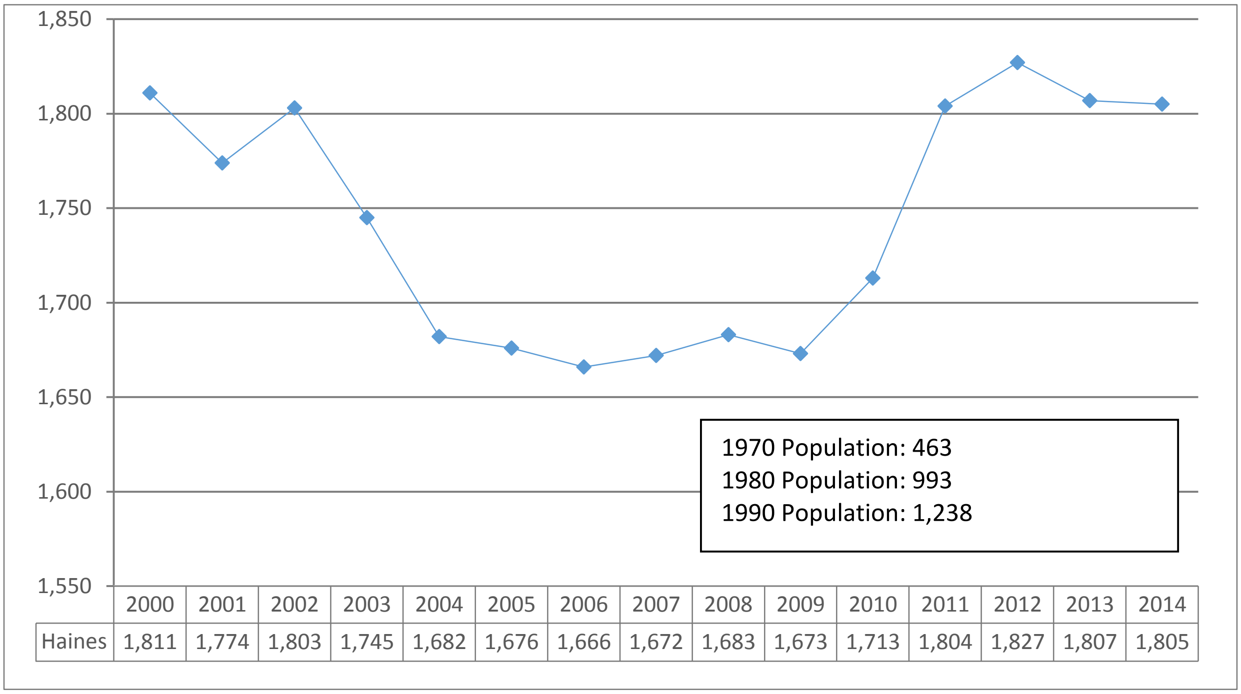
The Haines area was originally settled by the Chilkat Tlingits. The Chilkat Tlingits are now considered as two groups: the Chilkats of the Chilkat River, with Klukwan being the major population center, and the Chilkoots living in and near Haines. Haines itself was a trade center and mission site (ADF&G 1994). Klukwan, a Chilkat Indian Village near the Chilkat River and 22 miles north of Haines, had an estimated population of 84 in 2014. The village is known for its woven artwork of cedar bark and mountain goat hair. The area is host to the largest concentration of bald eagles in the world during the fall and winter at the nearby Chilkat Bald Eagle Reserve. Klukwan is located in the Hoonah-Angoon CA.

Settlement did not concentrate in Haines until the late 1800s. The commercial fishing industry located several canneries in the Chilkat Inlet area near Haines beginning in 1882; the Klondike gold rush brought thousands of prospectors to the town in the late 1890s; and the Dalton Trail was established as an open access route into the interior in the 1890s. Haines incorporated as a city in 1910 and as a third class borough in 1968 (ADF&G 1994). The community participates as the majority member of the Upper Lynn Canal Fish and Game Advisory Committee (ADF&G 2015a).

Haines is a major trans-shipment point because of its ice-free, deep-water port and dock, and year-round road access to Canada and Interior Alaska on the Alaska Highway. It is a northern terminus of the Alaska Marine Highway System and a hub for transportation to and from Southeast Alaska (Alaska DCED 2006).

The population of Haines increased steadily between 1970 and 2000, increasing almost threefold, with a net gain of 1,348 residents (Figure 3.23-18). Population has fluctuated since 2000, dropping to a low of 1,666 residents in 2006. Total estimated population was 1,805 in Haines in 2014 (Alaska DOL 2015b). School district enrollment has declined, dropping from 470 students in 1990 to 276 students in 2014 (Table 3.23-9).

Figure 3.23-18
Haines Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The economy of Haines is highly seasonal, based primarily on the commercial fishing and tourism industries (Himes-Cornell et al. 2013). Government, construction, and transportation are also important sectors for the community. Estimated gross fishing earnings of local residents neared $7 million in 2013 and 110 residents hold commercial fishing permits (ACFEC 2015). In 2001, Royal Caribbean Cruise Lines ceased serving Haines as a port of call. Still, around 45,000 cruise ship passengers visit each year, as well as many independent travelers through the Alaska Marine Highway System and by land along Haines Highway (Himes-Cornell et al. 2013).

Employment by industry data, as compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Approximately 5 percent of the labor force in Haines was identified as unemployed and seeking work in 2010, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $54,267, compared to the state median of $70,760; the corresponding median for the Haines Borough was $52,866 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	35	5
Construction	44	6
Manufacturing	14	2
Trade, Transportation and Utilities	169	22
Information	10	1
Financial Activities	15	2
Professional and Business Services	28	4
Educational and Health Services	94	12
Leisure and Hospitality	115	15
State Government	65	9
Local Government	152	20

Employment by Industry in 2013	Number	Percent of Total
Other	17	2
Unknown	2	< 1
Total Employment	**760**	**100**
Source: Alaska DOL 2015d		

Haines is part of an AP&T system that connects Haines and Skagway in the Upper Lynn Canal Region, and is connected via an intertie to the existing Inside Passage Electric Cooperative system that serves Klukwan and Chilkat Valley. The existing AP&T Goat Lake hydropower project is the main source of power for Haines (Table 3.12b-2). Residential rates for 2011 before and after the application of PCE payments were 22 cents/kWh and 15 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 22 cents/kWh.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of the Haines Borough in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-19. This area contains 232,496 acres of NFS land (among other land ownerships). Table 3.23-20 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. Harvest areas represent a very small portion of the community use area for Haines, ranging from less than 0.1 percent (Alternative 4) to 0.5 percent (Alternative 2). Harvest activities could have localized effects if they coincide with an area favored by Haines residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber harvest.

Figure 3.23-19
Haines' Community Use Area

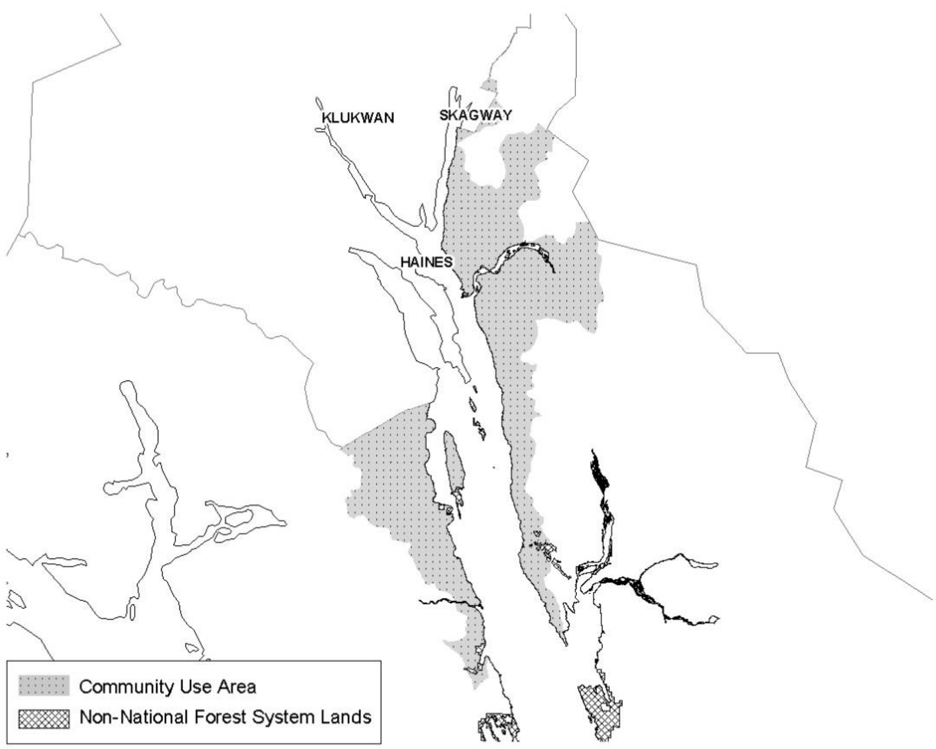


Table 3.23-21
Estimated Maximum Harvest (acres) over 100 Years in Haines' Community Use Area by Alternative

	Alternative				
	1	2	3	4	5
Young Growth	184	1,198	641	11	1,032
Old Growth	109	49	0	0	0
Total	**293**	**1,247**	**641**	**11**	**1,032**
Harvest as a Percent of Total NFS Lands in the Community Use Area	0.1%	0.5%	0.3%	<0.1%	0.4%

Economy
Commercial fishing, recreation and tourism, and subsistence use are important to Haines. Haines has an Alaska Marine Highway System ferry terminal and provides road access into Interior Alaska. Although timber harvest on State land and wood processing were historically a major sector of the Haines economy, wood products employment accounted for less than 10 jobs in Haines in 2012 (see Figure 3.23-5). Employment in the commercial fishing sector is not expected to be affected under any of the alternatives.

Subsistence
No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 68 percent of the total edible pounds of subsistence resources harvested by Haines' households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 72 percent of per capita subsistence harvest in Haines in 2012 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 15 percent of the total edible pounds of subsistence resources harvested by Haines households (Kruse and Frazier 1988). Deer accounted for 5 percent of per capita subsistence harvest by Haines residents in 2012 (ADF&G 2014).

Haines residents mainly harvest deer in GMU 4. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). Among Haines residents, total annual deer harvest has fluctuated over the past decade and in 2013 was about 26 percent lower (57 fewer deer) than in 2004 (ADF&G 2015b).

Twenty-three WAAs account for about 75 percent of deer harvest by Haines residents. The three most heavily used WAAs—3421, 2202, and 3836—accounted for about 28 percent of total deer harvest by Haines residents. As these numbers suggest, deer harvest by Haines residents is spread over a fairly wide area in GMU 4 (Table 3.23-22). As a result, Haines residents tend to comprise a relatively small share of total harvest by WAA, with one main exception—WAA 2202 on Sullivan Island, which has a low level of deer harvest but nearly all by Haines residents.

In 15 of the 23 WAAs, there would be no effect to deer habitat capability under any of the alternatives. Reductions in habitat capability in the eight affected WAAs would range from one to 10 percent, and would be similar under each alternative (Table 3.23-22). About 41 percent of the combined harvest in the 23 WAAs used by Haines residents is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

Table 3.23-22
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Haines Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Haines Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
3421	20	42	66	68%	62%	64%	63%	63%	63%
2202	18	18	18	91%	91%	91%	91%	91%	91%
3836	10	16	210	100%	100%	100%	100%	100%	100%
4252	9	51	72	92%	91%	92%	92%	92%	92%
3420	9	19	52	100%	100%	100%	100%	100%	100%
3938	7	41	75	100%	100%	100%	100%	100%	100%
1106	7	17	33	100%	100%	100%	100%	100%	100%
3416	6	78	88	100%	100%	100%	100%	100%	100%
4222	5	32	44	97%	96%	96%	96%	96%	96%
3524	5	51	82	99%	93%	98%	98%	94%	98%
3418	4	18	26	100%	100%	100%	100%	100%	100%
4253	3	48	66	84%	84%	84%	84%	83%	84%
3417	3	60	115	100%	101%	101%	101%	101%	101%
3525	3	56	118	75%	69%	71%	71%	70%	72%
4256	3	52	68	100%	100%	100%	100%	100%	100%
3002	3	272	299	69%	69%	69%	69%	69%	69%
3001	2	338	361	82%	82%	82%	82%	82%	82%
4041	2	16	19	91%	91%	91%	91%	91%	91%
2722	2	6	302	100%	100%	100%	100%	100%	100%
3309	2	72	81	100%	99%	99%	100%	100%	100%
3551	2	48	67	83%	73%	78%	77%	75%	77%
4146	2	4	28	100%	100%	100%	100%	100%	100%
3419	2	23	40	100%	100%	100%	100%	100%	100%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 Alternatives should be able to provide sufficient habitat capability for deer hunted in the Haines community use area by Haines residents, all rural hunters, and all hunters in the short term, and for Haines residents in the long term. All of the 1997 alternatives included substantially higher levels of timber harvest in Haines' community use area than the alternatives considered in this EIS (5 to over 1,000 times as high). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the short and long term for deer hunted by Haines residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to produce deer populations sufficient to avoid effects on hunter success for all rural hunters and all hunters in the long term. This may still be the case under all current alternatives.

In summary, use of most subsistence resources by Haines residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer in some of the WAAs hunted by Haines residents may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Haine’s subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Hollis

Affected Environment

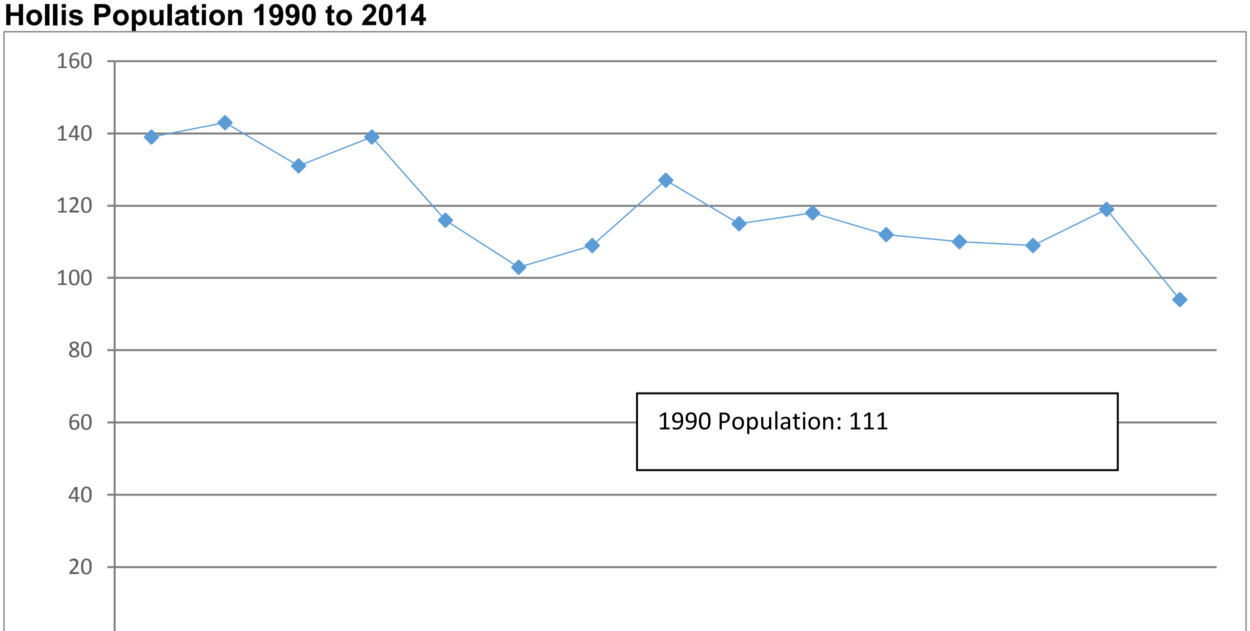
Overview and Demographic Characteristics

Hollis is located on east Prince of Wales Island, 19 miles east of Craig. According to the 2010 Census, Hollis had a population of 112, with Alaska Natives comprising 4 percent of the total (U.S. Census Bureau 2011).

Hollis, initially settled as a mining camp at the turn of the century, developed into a logging camp in the mid-1950s. In 1960, when Thorne Bay became center of the logging industry on central Prince of Wales Island, most Hollis residents moved to Thorne Bay. Hollis grew as a community during the 1990s, due in part to an Alaska Marine Highway terminal there. The Inter-Island Ferry Authority provides daily ferry service between Ketchikan and Hollis. Roads now connect Hollis with most other communities on Prince of Wales Island. A State land sale at Hollis in 1980 led to its present status as a permanent community (ADF&G 1994).

The population of Hollis increased by 28 people or 25 percent between 1990 and 2000. Peaking at 143 residents in 2001, the population of Hollis has since fluctuated, while generally trending downward (Figure 3.23-20). Total estimated population in Hollis was 94 in 2014 (Alaska DOL 2015b). School enrollment has remained relatively constant, with 14 students enrolled in 2014 (Table 3.23-9).

Figure 3.23-20
Hollis Population 1990 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Hollis	139	143	131	139	116	103	109	127	115	118	112	110	109	119	94

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions
Support services for the timber industry, the ferry authority, the Forest Service, and local government provide the majority of employment to the residents of Hollis. While the timber industry is prevalent on the Prince of Wales Island, it does not occur directly in the Hollis community (Alaska DCED 2002). Viking Lumber, the largest sawmill presently operating in the region, is located nearby between Craig and Klawock. According to the 2013 mill survey conducted for the Forest Service, this mill, which has an installed production capacity of 80 MMBF, processed approximately 15 MMBF in 2013 and employed 34 people (Parrent and Grewe 2014).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Approximately 33 percent of the labor force in Hollis was identified as unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $33,500, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	**Number**	**Percent of Total**
Natural Resources and Mining	6	11
Construction	4	7
Manufacturing	3	5
Trade, Transportation and Utilities	13	23
Information	0	0
Financial Activities	1	2
Professional and Business Services	1	2
Educational and Health Services	3	5
Leisure and Hospitality	6	11
State Government	5	9
Local Government	14	25
Other	1	2
Unknown	0	0
Total Employment	**57**	**100**

Source: Alaska DOL 2015d

Hollis is part of the AP&T system that connects the community with the communities of Coffman Cove, Craig, Hydaburg, Kasaan, Klawock, and Thorne Bay. Electricity is diesel generated. Residential rates for 2011 before and after the application of PCE payments were 24 cents/kWh and 16 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 24 cents/kWh.

Potential Effects

Community Use Area
The general area commonly used or related to by many of the residents of Hollis in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-21. This area contains 289,873 acres of NFS land (among other land ownerships). Table 3.23-23 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest areas represent a relatively small portion of the community use area for Hollis, ranging from 3.3 percent (Alternative 1) to 5.2 percent (Alternative 3). Harvest activities could have localized effects if they coincide with an area favored by Hollis residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it

may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old growth harvest in this area (see Table 3.23-23).

Figure 3.23-21
Hollis' Community Use Area

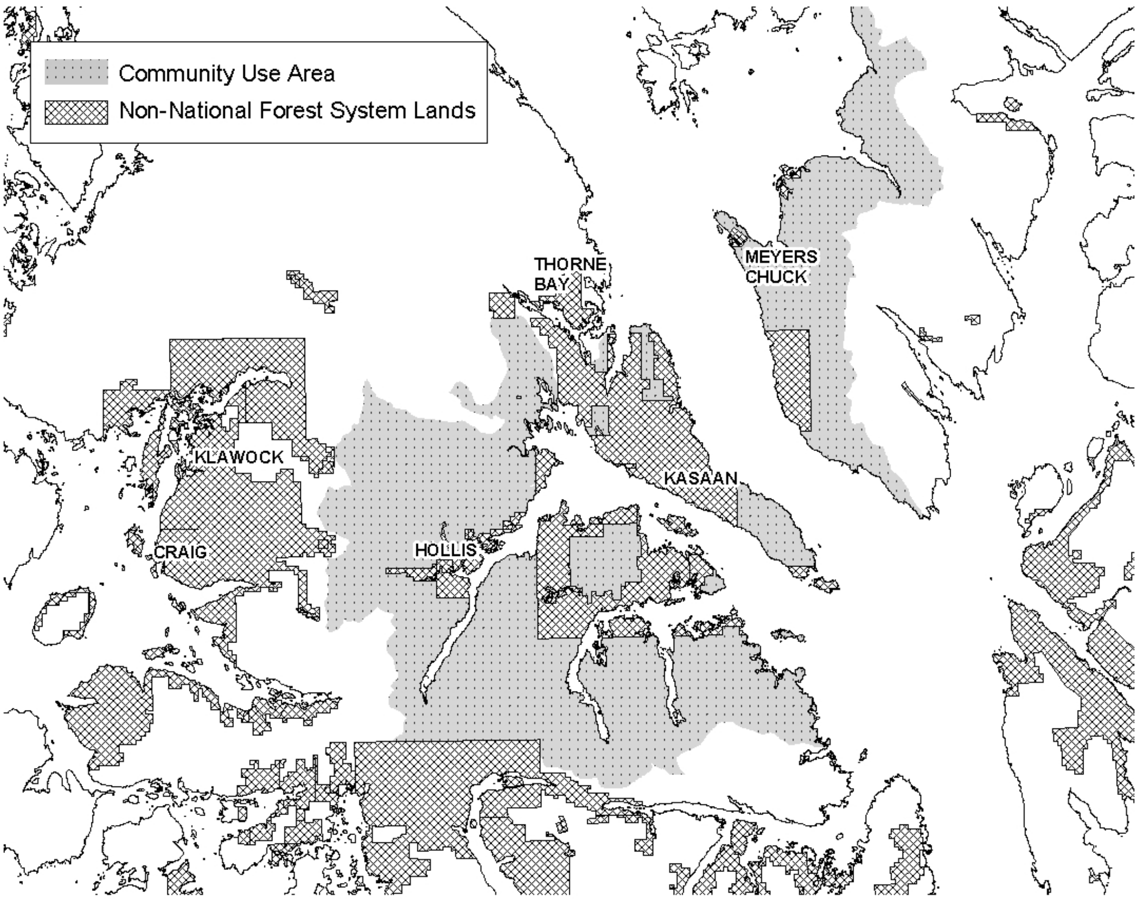


Table 3.23-23
Estimated Maximum Harvest (acres) over 100 Years in Hollis' Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	7,683	13,620	13,168	9,087	9,734
Old Growth	1,790	1,059	1,801	1,361	1,132
Total	**9,473**	**14,679**	**14,969**	**10,448**	**10,866**
Harvest as a Percent of Total NFS Lands in the Community Use Area	3.3%	5.1%	5.2%	3.6%	3.7%

Economy

Hollis is the site of the Inter-Island Ferry Authority terminal that provides daily access between Ketchikan and Hollis, and greater Prince of Wales Island. As such, transportation is a major component of the community's economy. Subsistence and timber also play important roles. The ferry terminal would continue to provide important access to Prince of Wales Island under all alternatives.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 65 percent of the total edible pounds of subsistence resources harvested by Hollis households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 73 percent of per capita subsistence harvest in Hollis in 1998 (ADF&G 2014).

The 1988 TRUCS study found that deer account for 23 percent of the total edible pounds of subsistence resources harvested by Hollis households (Kruse and Frazier 1988). Deer accounted for 18 percent of the per capita subsistence harvest by Hollis residents in 1998 (ADF&G 2014).

Hollis residents harvest deer primarily from within GMU 2. Following a deer population decline 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Hollis residents, total annual deer harvest has generally declined, and in 2013 was about 75 percent lower (33 fewer deer) than in 2004 (ADF&G 2015b).

Each of the three WAAs most used by Hollis residents occur in an area with substantial past timber harvest and, therefore, deer habitat capabilities are currently estimated to be well below 1954 levels (Table 3.23-24). Under each of the alternatives, additional harvest would occur that would reduce habitat capabilities after 100 years by a further 5 to 7 percent in WAA 1214, 1 to 2 percent in WAA 1317, and 5 to 8 percent in WAA 1422 (Table 3.23-24).

Table 3.23-24
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Hollis Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1/]

	Average Deer Harvest from 2004 to 2013[2/]			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Edna Bay Residents	All Rural Hunters[3/]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1214	11	121	235	77%	70%	72%	72%	72%	71%
1317	10	95	133	58%	56%	56%	56%	57%	57%
1422	3	247	383	57%	49%	52%	51%	51%	51%

[1/] Calculated based on harvest where location is known.
[2/] 2004 data not available for Hollis residents.
[3/] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 Alternatives should be able to provide habitat capability for deer hunted in the Hollis community use area by Hollis residents and all rural hunters in both the short term and long term. All of the

1997 alternatives included substantially higher levels of timber harvest in Hollis' community use area than the alternatives considered in this EIS (approximately 198 to 839 percent higher). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the short and long term for deer hunted by Hollis residents and all rural hunters. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to produce deer populations sufficient to avoid effects on hunter success for all hunters in both the short and long term. This may still be the case under all alternatives.

In summary, use of most subsistence resources by Hollis residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Hoonah

Affected Environment

Overview and Demographic Characteristics

Hoonah is located on Port Frederick, along Icy Strait on the northeast shore of Chichagof Island, 40 air miles west of Juneau. Hoonah is predominantly a Native community and has been the principal village for the Hoonah Tlingit Clans since the late 1800s. According to the 2010 Census, Hoonah had a population of 760, with Alaska Natives comprising 53 percent of the total (U.S. Census Bureau 2011). Whitestone Logging Camp, with a population of 17 (U.S. Census Bureau 2011), is adjacent to Hoonah. The community of Game Creek is located 2.6 miles southwest of Hoonah.

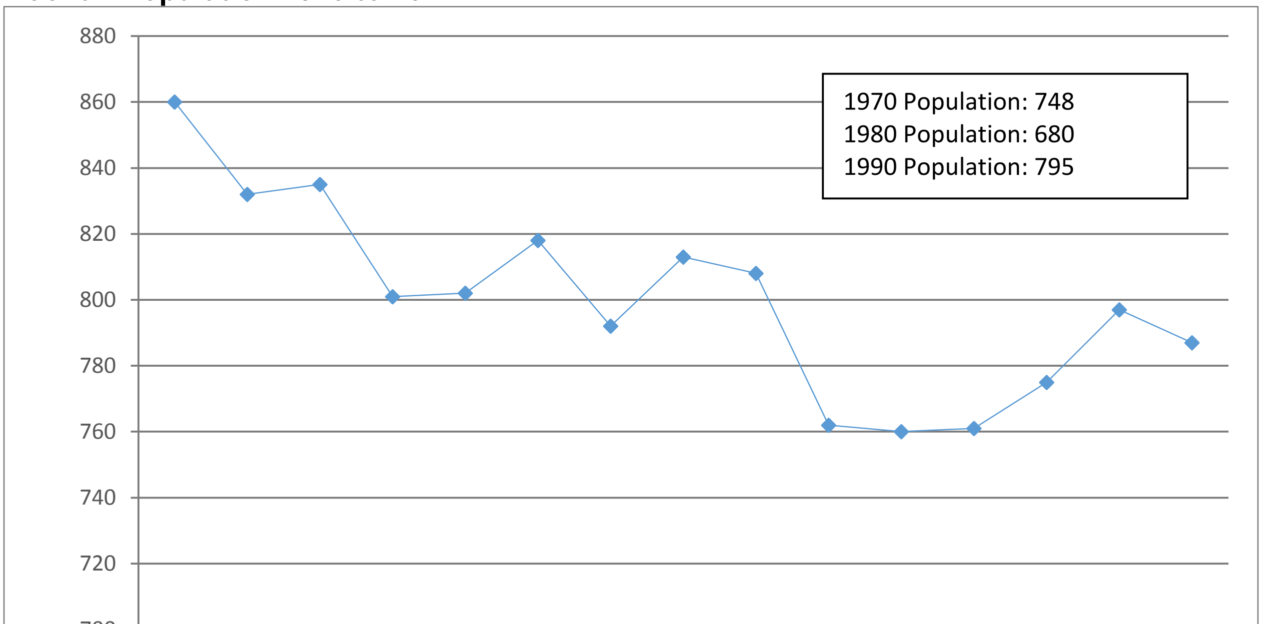
The village of Hoonah has been occupied since prehistoric times by the Tlingit people. Groups of Huna Tlingit lived all or part of the year at seasonal camps and small winter settlements throughout the Huna territory. Dozens of camps and settlements have been documented through archaeological surveys. The Hoonah Tlingit have very close ties to the Glacier Bay area across Icy Strait.

In 1880, the Northwest Trading Company built a store in Hoonah. The following year, missionaries settled in the town and established the Presbyterian Home Mission church and school. By 1887, about 500 people were wintering in the village. When the post office was established in 1901, the village was officially named Hoonah, which means "village by the cliff" in Tlingit. In 1944, fire burned many homes in Hoonah and destroyed the many traditional ceremonial costumes and keepsakes of the villagers. The town was rebuilt and became a center for logging operations on northern Chichagof Island (ADF&G 1994). The community has a local Fish and Game Advisory Committee, shared with Gustavus as the "Icy Straits" advisory committee (ADF&G 1994; ADF&G 2015a).

Icy Strait Point, an old cannery located approximately 1.5 miles north of Hoonah opened in 2004 as Alaska's first cruise destination built specifically for tourists. As noted below, this has contributed to a general shift in the economy towards tourism related businesses.

The population of Hoonah increased by 180 people or 26 percent between 1980 and 2000. Population estimates have fluctuated from year-to-year since, with the population generally exhibiting a downward trend (Figure 3.23-22). Total estimated population in Hoonah was 787 in 2014 (Alaska DOL 2015b). The general overall decline in population has been accompanied by a much larger decline in school enrollment, with the number of enrolled students dropping by almost 50 percent from 2000 to 2014, decreasing from 226 in 2000 to 114 in 2014 (Table 3.23-9).

Figure 3.23-22
Hoonah Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Hoonah	860	832	835	801	802	818	792	813	808	762	760	761	775	797	787

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Hoonah's economy is primarily based on commercial fishing, timber, tourism, and sport hunting and fishing (Himes-Cornell et al. 2013). In 2013, a total of 82 residents held commercial fishing permits and estimated gross earnings exceeded $3.6 million (ACFEC 2015). Fish processing occurs at plants in Hoonah and nearby Excursion Inlet. The City of Hoonah and the school district are the major local government employers (Alaska DCED 2002). In addition, most Hoonah residents maintain a subsistence lifestyle based on salmon, halibut, shellfish, deer, waterfowl and berries (Himes-Cornell et al. 2013).

The Icy Straits Lumber Company and D&L Woodworks are both located in Hoonah. According to the 2013 mill survey conducted for the Forest Service, the Icy Straits mill, which has an installed production capacity of 3 MMBF, processed approximately 0.4 MMBF in 2013 and employed 8 people (Parrent and Grewe 2014). D&L Woodworks has an installed production capacity of 1.8 MMBF and processed 0.1 MMBF in 2013, supporting 2 employees (Parrent and Grewe 2014). This processing total represented 13 percent and 3 percent of the existing capacity at the Icy Straits and D&L Woodworks facilities, respectively.

The economy of Hoonah has undergone a major transformation in recent years with the completion of Icy Strait Point, the historic cannery (Dugan et al. 2009). Icy Strait Point is the largest single employer in Hoonah, with 124 employees, mostly Hoonah residents, working there three to four days a week. Icy Strait

Point includes a museum and serves as a base for tours, including forest tours, whale watching, and fishing charters. These tours served an estimated 30,000 people in 2005 (Dugan et al. 2009). Icy Strait Point is also a cruise ship port of call, with over 50 cruise ships carrying tens of thousands of passengers visiting each year (Himes-Cornell et al. 2013; Cruise Line Agencies of Alaska 2006).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Approximately 16 percent of the labor force in Hoonah was identified as unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). However, due to tourist activities, unemployment drops substantially during summer months. Median household income was $50,714, compared to the state median of $70,760; the corresponding median for the Hoonah-Angoon CA was $49,545 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	17	4
Construction	20	5
Manufacturing	24	6
Trade, Transportation and Utilities	58	14
Information	11	3
Financial Activities	0	0
Professional and Business Services	7	2
Educational and Health Services	35	9
Leisure and Hospitality	115	28
State Government	12	3
Local Government	111	27
Other	3	1
Unknown	0	0
Total Employment	**413**	**100**

Source: Alaska DOL 2015d

Hoonah has some of the highest electric rates in Alaska due to the use of diesel generated power. Residential rates for 2011 before and after the application of PCE payments were 62 cents/kWh and 22 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 62 cents/kWh.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Hoonah in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-23. This area contains 583,825 acres of NFS land (among other land ownerships). Table 3.23-25 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest areas represent a small portion of the community use area for Hoonah, ranging from 1.8 percent (Alternative 4) to 3.6 percent (Alternative 2). Harvest activities could have localized effects if they coincide with an area favored by Hoonah residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 5; however, it may be noted that Alternative 1 (which would have less potential total suitable harvest compared to Alternatives 2 and 5) would have the largest potential old growth harvest in this area (see Table 3.23-25).

Economy

Commercial fishing, logging, and subsistence use are important to Hoonah. The Icy Straits sawmill, which is located in Hoonah, employed 15 people in 2006. Hoonah residents are also employed by the recently opened Icy Strait Point development. Employment in the commercial fishing sector is not expected to be affected under any of the alternatives.

The Gartina Falls and Water Supply Creek projects are both located on non-NFS lands and would not be directly affected by the Renewable Energy Plan Components identified in Chapter 5 of the proposed Forest Plan amendment.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 59 percent of the total edible pounds of subsistence resources harvested by Hoonah households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 68 percent of per capita subsistence harvest in Hoonah in 2012 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 23 percent of the total edible pounds of subsistence resources harvested by Hoonah households (Kruse and Frazier 1988). Deer accounted for 15 percent of per capita subsistence harvest by Hoonah residents (ADF&G 2014).

Figure 3.23-23
Hoonah's Community Use Area

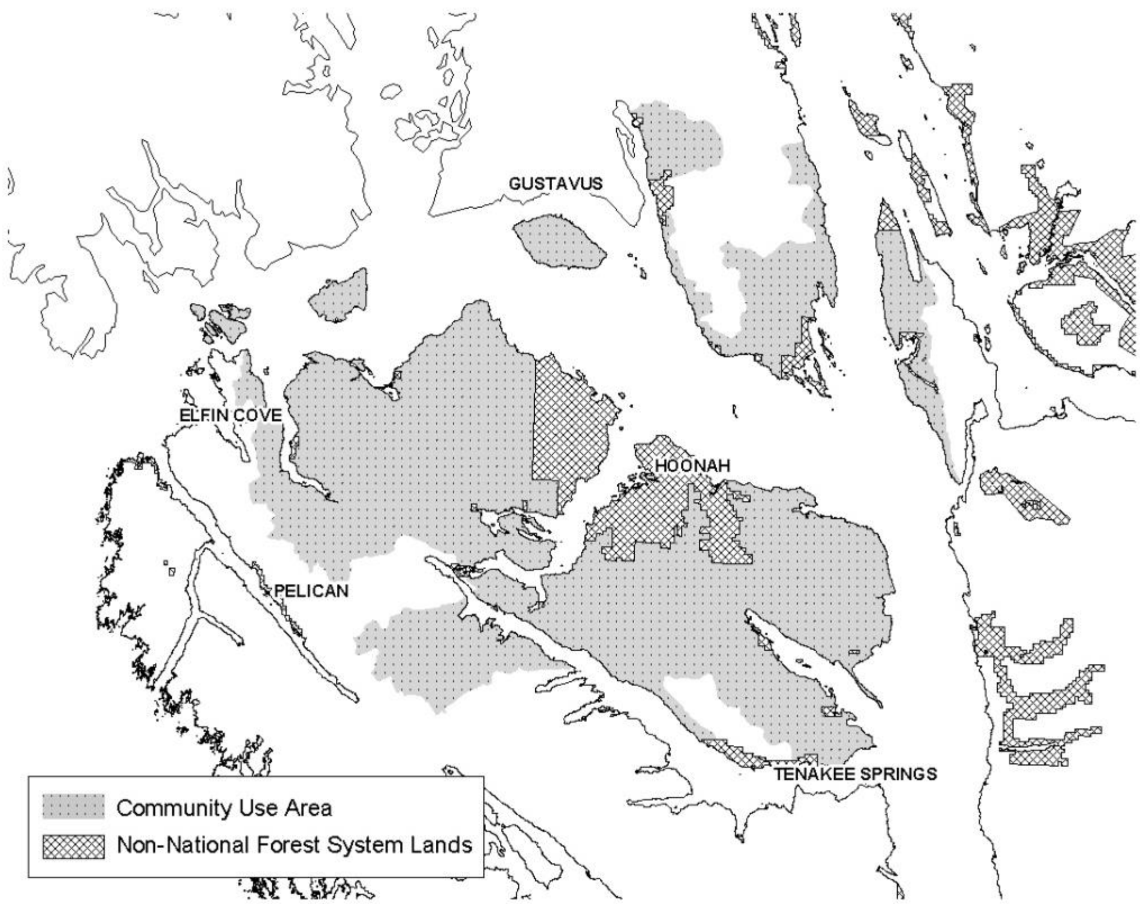


Table 3.23-25
Estimated Maximum Harvest (acres) over 100 Years in Hoonah's Community Use Area by Alternative

	Alternative				
	1	2	3	4	5
Young Growth	6,946	18,385	12,011	6,784	15,727
Old Growth	5,394	2,419	2,581	3,678	3,730
Total	**12,339**	**20,804**	**14,592**	**10,462**	**19,457**
Harvest as a Percent of Total NFS Lands in the Community Use Area	2.1%	3.6%	2.5%	1.8%	3.3%

Hoonah residents mainly harvest deer on Chichagof Island, which is included in GMU 4. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). Among Hoonah residents, total annual deer harvest dropped substantially in 2006 and continues to be much lower than it was in 2004 and 2005. While harvest appears to be recovering, in 2013 Hoonah residents total harvest was about 48 percent lower (354 fewer deer) than in 2004 (ADF&G 2015b).

Six WAAs account for the majority (73 percent) of deer harvest by Hoonah residents (Table 3.23-26). The Hoonah portion represents about 89 percent of the combined average rural hunter harvest and 57 percent of the total harvest in these WAAs. About 36 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

Table 3.23-26
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Hoonah Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Hoonah Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
3523	60	62	88	79%	74%	77%	76%	75%	76%
3524	45	51	82	99%	93%	98%	98%	94%	98%
3551	45	48	67	83%	73%	78%	77%	75%	77%
3525	44	56	118	75%	69%	71%	71%	70%	72%
4253	43	48	66	84%	84%	84%	84%	83%	84%
4252	42	51	72	92%	91%	92%	92%	92%	92%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

All of the WAAs identified in Table 3.23-26 are in areas with at least some past timber harvest and deer habitat capabilities are currently estimated to be below 1954 levels. Under each of the alternatives, additional harvest would further reduce habitat capabilities after 100 years by one to 10 percent.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted by Hoonah residents in the short term. However, projected deer harvest in the Hoonah community use area would exceed the capability of the habitat to produce sufficient deer populations to avoid effects for all rural hunters and all hunters in the short term, as well as Hoonah residents in the long term. The FEIS analysis concluded that at some point a restriction in hunting might be necessary. All of the 1997 alternatives included substantially higher levels of timber harvest in Hoonah's community use area than the alternatives considered in this EIS (approximately 3 to 14 times as high). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the short term and potentially over the long term for deer hunted by Hoonah residents. At some point, a resctriction in hunting, particularly for non-rural hunters, may still be necessary under all current alternatives.

In summary, use of most subsistence resources by Hoonah residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Hoonah's subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Hydaburg

Affected Environment

Overview and Demographic Characteristics

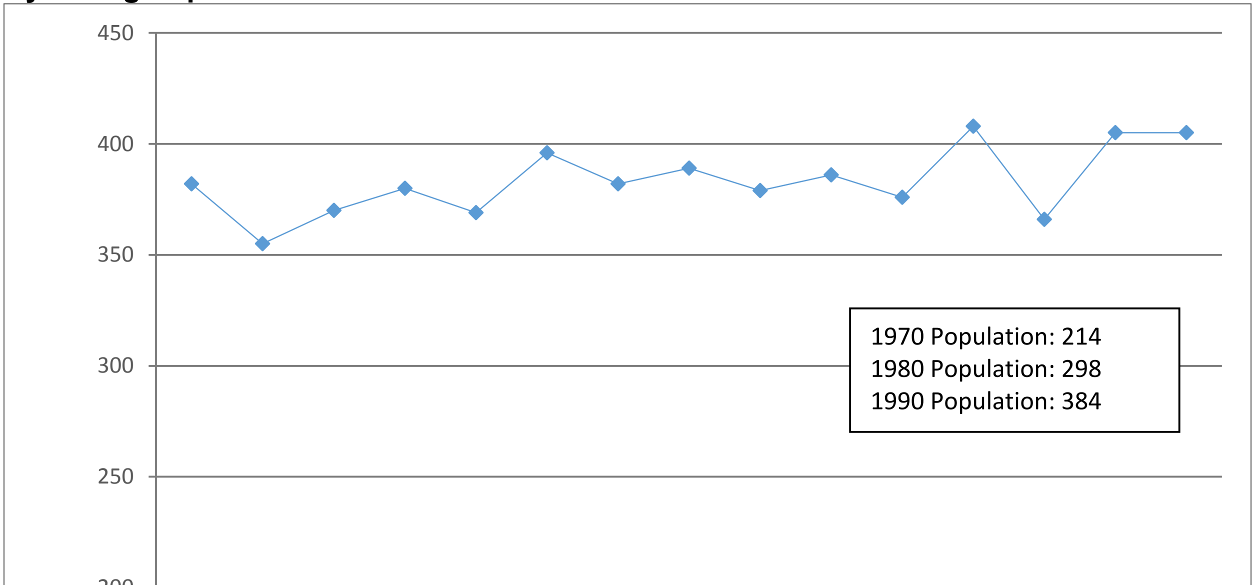
Hydaburg is located on the southwest side of Prince of Wales Island, 45 air miles northwest of Ketchikan. According to the 2010 Census, Hydaburg had a population of 376, with Alaska Natives comprising 77 percent of the total (U.S. Census Bureau 2011). Hydaburg is the largest Haida village in Alaska (Himes-Cornell et al. 2013).

The Haida Indians migrated to Prince of Wales Island, a predominantly Tlingit area, from Graham Island, Canada. After combining three villages, the present site was chosen initially as the Hydaburg Indian Reservation in 1912. It became a fishing village with the first fish processing plant opening in 1927, and three other canneries operating through the 1930s. Seafood processing was active until 1984 when a fire destroyed the cannery (ADF&G 1994). Hydaburg is connected by road to Craig, Klawock, Hollis, and northern parts of the Island.

In 1936, Hydaburg became the first Alaskan Native village to form an Indian Reorganization Act Council. In 1972, Hydaburg incorporated as a first class city. The community has a local Fish and Game Advisory Committee that became active in 2013 after having been inactive since 1987 (ADF&G 2015a). The committee members are focused on sport and personal use fishing, hunting, and subsistence issues (ADF&G 2015a).

Hydaburg's population increased by 79 percent between 1970 and 1990, then remained fairly constant between 1990 and 2000. Population has fluctuated somewhat from year-to-year since 2000, but generally remained fairly constant (Figure 3.23-24). The City of Hydaburg had an estimated population of 405 in 2014 (Alaska DOL 2015b). School enrollment has dropped since 2000, decreasing from 91 students in 2000 to 70 students in 2014 (Table 3.23-9).

Figure 3.23-24
Hydaburg Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Hydaburg	382	355	370	380	369	396	382	389	379	386	376	408	366	405	405

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Hydaburg's economy is based primarily on subsistence, commercial fishing, timber, and government (Himes-Cornell et al. 2013). A total of 20 residents held commercial fishing permits in 2013, with estimated gross earnings of $2.6 million from salmon and herring fisheries (ACFEC 2015). The Haida Corporation has a substantial timber holding, a log storage facility, and a sort yard. It suspended logging in 1985 due to a decline in the timber market and leases the storage facility and sort yard to Sealaska Corporation. The tribal council, city, school, and the Southeast Alaska Regional Health Consortium are leading employers, and the log transfer facility and sort yard still provide part-time and seasonal employment (Himes-Cornell et al. 2013).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Approximately 17 percent of the labor force in Hydaburg was identified as unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $37,361, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	4	3
Construction	19	14
Manufacturing	1	1
Trade, Transportation and Utilities	8	6
Information	1	1
Financial Activities	8	6
Professional and Business Services	3	2
Educational and Health Services	22	16
Leisure and Hospitality	1	1
State Government	4	3

Employment by Industry in 2013	Number	Percent of Total
Local Government	69	49
Other	1	1
Unknown	0	0
Total Employment	**141**	**100**
Source: Alaska DOL 2015d		

Hydaburg is part of the AP&T system that connects the community with the communities of Coffman Cove, Craig, Hollis, Kasaan, Klawock, and Thorne Bay. Electricity is diesel generated. Residential rates for 2011 before and after the application of PCE payments were 24 cents/kWh and 16 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 24 cents/kWh.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Hydaburg in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-25. This area contains 764,430 acres of NFS land (among other land ownerships). Table 3.23-27 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest areas represent a small portion of the community use area for Hydaburg, ranging from 1.8 percent (Alternative 1) to 2.7 percent (Alternative 3). Harvest activities could have localized effects if they coincide with an area favored by Hydaburg residents, and roject-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-27).

Figure 3.23-25
Hydaburg's Community Use Area

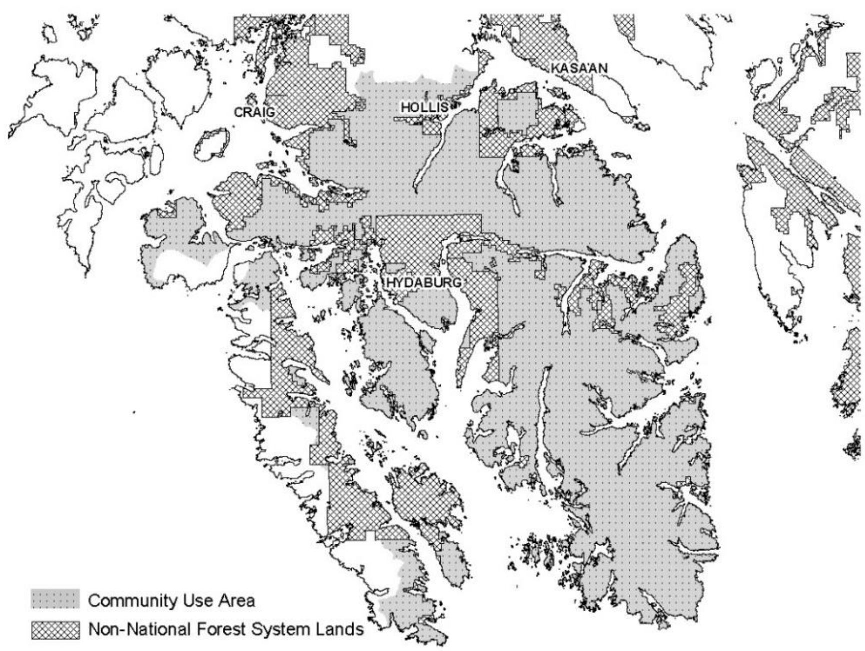


Table 3.23-27
Estimated Maximum Harvest (acres) over 100 Years in Hydaburg's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	10,215	17,765	16,937	12,023	12,951
Old Growth	3,467	1,851	3,912	2,789	2,320
Total	**13,682**	**19,616**	**20,849**	**14,812**	**15,271**
Harvest as a Percent of Total NFS Lands in the Community Use Area	1.8%	2.6%	2.7%	1.9%	2.0%

Economy

Subsistence use and commercial fishing are the primary elements of Hydaburg's economy. Employment in the commercial fishing sector is not expected to be affected under any of the alternatives.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 80 percent of the total edible pounds of subsistence resources harvested by Hydaburg households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for the majority (81 percent) of per capita subsistence harvest in Hydaburg in 2012 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 13 percent of the total edible pounds of subsistence resources harvested by Hydaburg households (Kruse and Frazier 1988). Deer accounted for 13 percent of per capita subsistence harvest by Hydaburg residents in 2012 (ADF&G 2014).

Hydaburg residents primarily harvest deer on south Prince of Wales Island, which is included in GMU 2. Following a deer population decline 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Hydaburg residents, total annual deer harvest has fluctuated over the years and in 2013 was about 18 percent lower (7 fewer deer) than in 2004 (ADF&G 2015b).

Residents of Hydaburg harvest the majority (73 percent) of their deer from three WAAs (Table 3.23-28). The Hydaburg portion represents about 19 percent of the combined average rural hunter harvest and 11 percent of all harvest in these WAAs. About 41 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

Only one of the three WAAs would be affected under all of the alternatives (Table 3.23-28). In WAA 1214, where past timber harvest has already reduced deer habitat capability well below 1954 levels, additional harvest would occur that would reduce habitat capabilities by a further 5 to 7 percent (Table 3.23-28).

Table 3.23-28
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Hydaburg Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Hydaburg Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1107	34	99	130	99%	99%	99%	99%	99%	99%
1214	6	120	235	77%	70%	72%	72%	72%	71%
1106	4	17	33	100%	100%	100%	100%	100%	100%

[1] Calculated based on harvest where location is known
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted by Hydaburg residents, as well as for all deer hunted within the WAAs of the Hydaburg community use area in both the short and long term. Given the small effect to WAAs under the current alternatives, which include substantially less proposed timber harvest than considered in 1997, it is likely all of the current alternatives would also provide sufficient habitat capability for deer hunted by Hydaburg residents as well as all hunters using the area.

In summary, use of most subsistence resources by Hydaburg residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. Subsistence use of deer is also not likely to be directly affected at a level that would require hunting restrictions. Indirect effects associated with increased competition for deer within Hydaburg's subsistence use areas could occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Hyder

Affected Environment

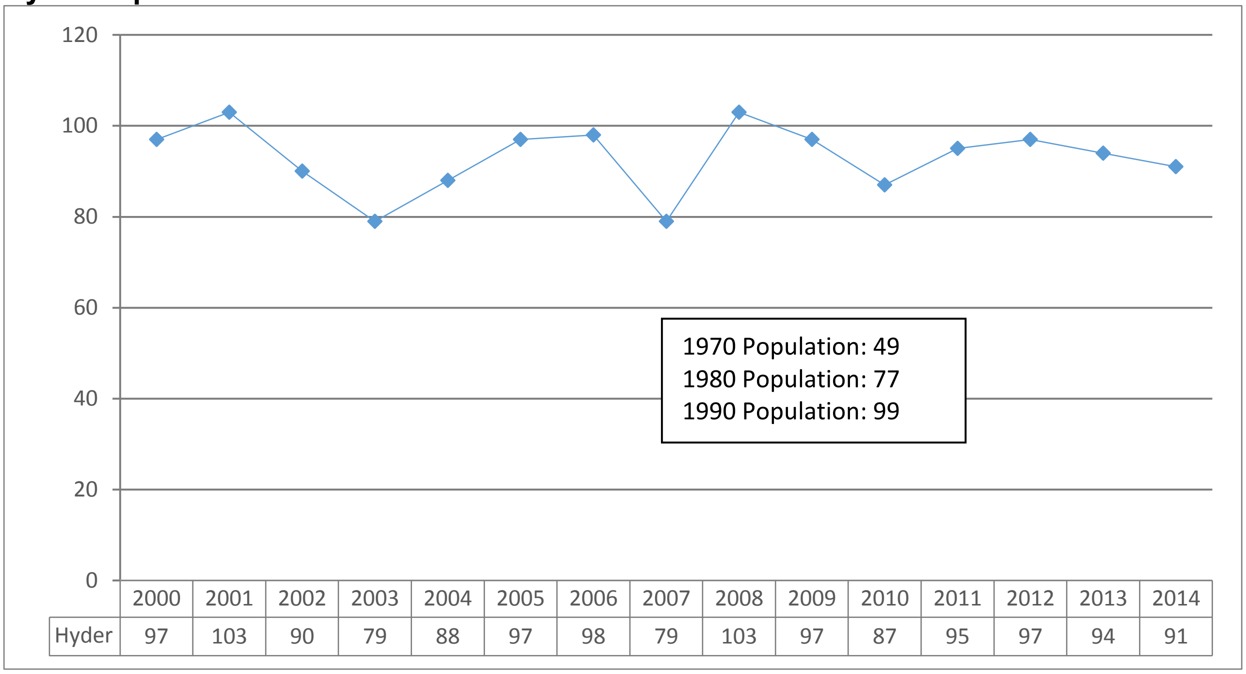
Overview and Demographic Characteristics

Hyder is a community located at the head of Portland Canal, a 70-mile-long fjord that forms part of the United States/Canadian border. Hyder is just 2 miles from Stewart, British Columbia, and 75 air miles from Ketchikan. Hyder is one of three Southeast Alaska communities connected by road to Canada. According to the 2010 Census, Hyder had a population of 87, with one person identifying as an Alaska Native (U.S. Census Bureau 2011).

Nass River Tsimshians inhabited the area, which they called Skam-a-Kounst, "a safe place," prior to the coming of white prospectors in the late 1890s. The first official exploration and building at the town site occurred in 1896 by the U.S. Army Corps of Engineers. Stewart also became settled at this time, as gold, silver, and other mineral mining operations developed. The two towns grew together with an initial economic base in mining (ADF&G 1994).

The population of Hyder, which slightly more than doubled between 1970 and 1990, has since remained relatively stable (Figure 3.23-26). Total estimated population was 91 in Hyder in 2014 (Alaska DOL 2015b). Hyder School had 10 students enrolled in 2014 (Table 3.23-9).

Figure 3.23-26
Hyder Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Hyder's economy is primarily based on tourism, mining, logging, fishing, and sport hunting/fishing, and, as such, is largely seasonal (Himes-Cornell et al. 2013). Four of the five largest employers are tourist related. Many tourists enter Hyder from Canada. Stewart, British Columbia, located only 2 miles from Hyder, is Canada's northernmost year-round ice-free port and the two towns share visitor services. The construction industry also provides employment in Hyder, and two residents held commercial fishing permits in 2013 (ACFEC 2015).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. While the ACS estimated that no adults in Hyder were unemployed and seeking work in 2013, an estimated 70 percent of the population was not in the labor force, which includes seasonal workers interviewed during the off season who were not looking for work (U.S. Census Bureau 2014b). Median household income was $21,944, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	1	3
Construction	12	40
Manufacturing	0	0
Trade, Transportation and Utilities	5	17
Information	0	0
Financial Activities	0	0
Professional and Business Services	1	3
Educational and Health Services	1	3
Leisure and Hospitality	2	7
State Government	8	27
Local Government	0	0
Other	0	0

Employment by Industry in 2013	Number	Percent of Total
Unknown	0	0
Total Employment	**30**	**100**
Source: Alaska DOL 2015d		

Hyder receives electricity services from BC Hydro via nearby Stewart, B.C., Canada (Himes-Cornell et al. 2013). In 2012, energy sales to Hyder totaled 1 gigawatt per hour and were forecasted to remain at that level through 2033 (BC Hydro 2012). Rate information was not available for Hyder.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Hyder in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-27. This area contains 108,809 acres of NFS land (among other land ownerships). Table 3.23-29 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. The potential harvest levels represent a small portion of the community use area for Hyder. The harvest levels are about 0.1 percent of the total NFS lands in the Hyder community use area under Alternatives 1 and 5, less than 0.1 percent under Alternative 2, and no harvesting would occur in the Hyder community use area under Alternatives 3 and 4. Harvest activities could have localized effects if they coincide with a particular location favored by Hyder residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 1, 5, and 2.

Figure 3.23-27
Hyder's Community Use Area

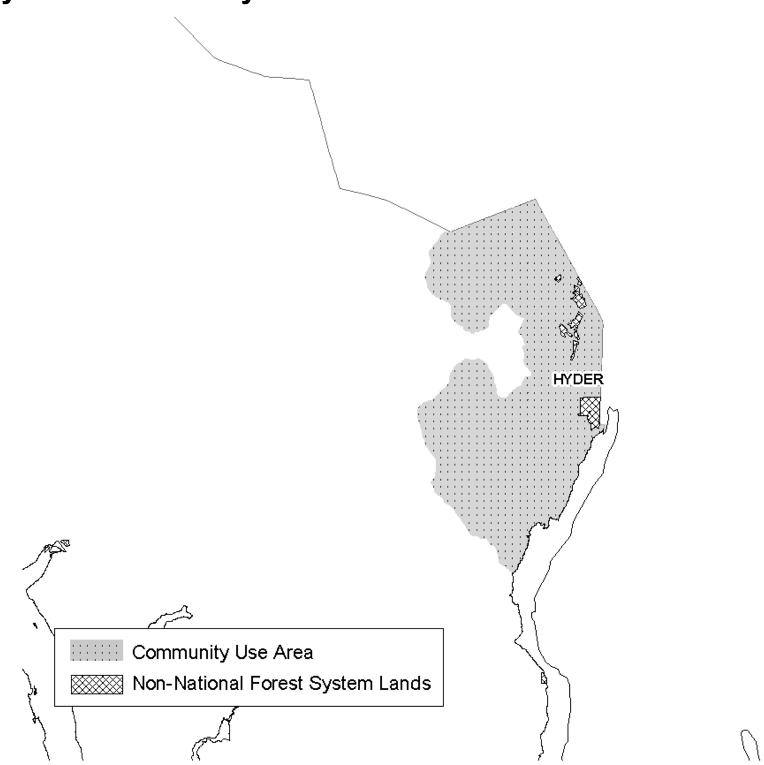


Table 3.23-29
Estimated Maximum Harvest (acres) over 100 Years in Hyder's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	0	0	0	0	0
Old Growth	121	54	0	0	83
Total	**121**	**54**	**0**	**0**	**83**
Harvest as a Percent of Total NFS Lands in the Community Use Area	0.1%	< 0.1%	0.0%	0.0%	0.1%

Economy

Hyder is a small former mining town that now relies upon tourism and commercial fishing for the majority of its income. These activities are not expected to be affected under any of the alternatives.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 80 percent of the total edible pounds of subsistence resources harvested by Hyder households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for the majority (85 percent) of per capita subsistence in Hyder in 1987 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for only a fraction of the total edible pounds of subsistence resources harvested by Hyder households (Kruse and Frazier 1988). Deer accounted for a very small amount of per capita subsistence harvest by Hyder residents in 1987; larger animals such as bear and moose made up most of the land mammal subsistence harvest (ADF&G 2014).

Data were not provided for Hyder in the ADF&G deer harvest reports for 2004 to 2013. The majority of deer harvest by Hyder residents likely takes place in GMU 1A. As of 2013, deer numbers were at very low levels throughout most of GMU 1A and were no longer meeting local hunter demands or established deer harvest objectives (Harper 2013). Though not closed, starting in 2011 the deer hunting season was shortened to August 1 through November 30 instead of continuing through December. Hunters are known to be shifting efforts to other more productive areas, such as nearby GMU 2, leading to less hunter effort and fewer deer harvested in GMU 1A (Harper 2013).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted in Hyder's community use area by Hyder residents, all rural hunters, and all hunters in the short term. In the long term projected harvest for all rural hunters and all hunters in the Hyder community use area would exceed the capability of habitat to support deer populations sufficient to avoid effects on hunter success. As noted above, deer populations in the area are currently not sufficient to meet local demand. Under the alternatives in this EIS, proposed suitable acres have been reduced to either zero or a very small fraction of Hyder's community use area. Therefore, additional impacts to deer subsistence use by Hyder residents or other hunters using the area are unlikely.

In summary, use of most subsistence resources by Hyder residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. Subsistence use of deer is unlikely to be affected by any of the alternatives; however, further hunting restrictions are possible due to existing conditions. It is unlikely that Hyder residents would be affected by increased competition in WAA 826, which surrounds their community, because of the limited access to this area and current low deer numbers, noted above.

Affected Environment

Juneau and Vicinity

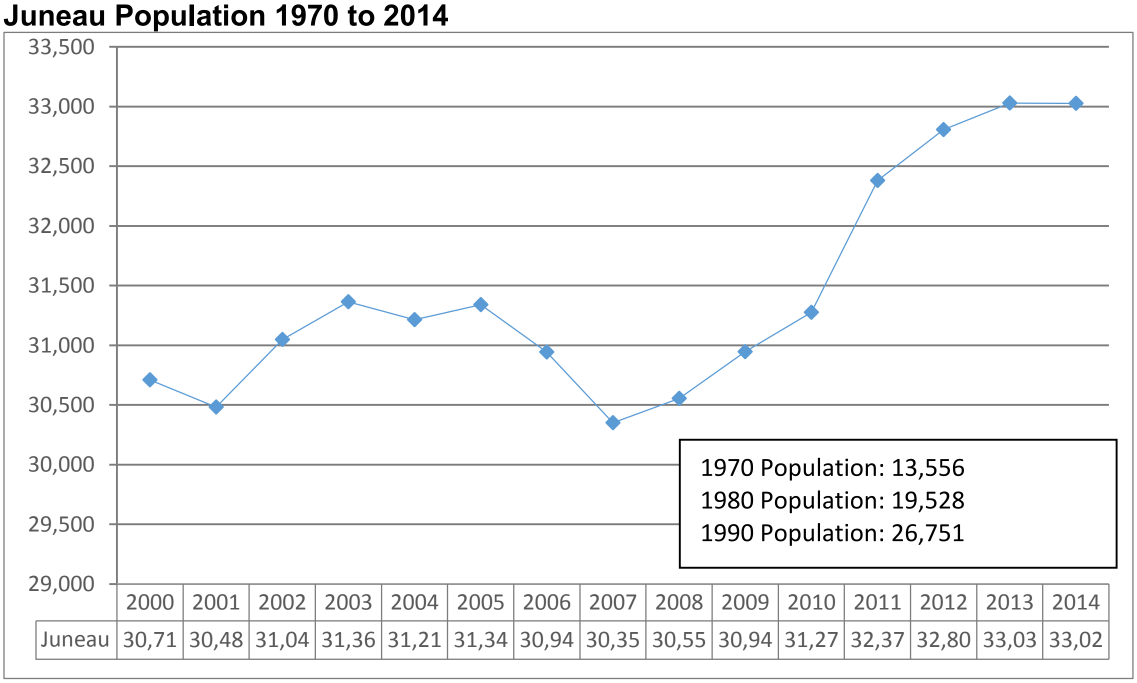
Overview and Demographic Characteristics

The City and Borough of Juneau surrounds the Gastineau Channel in Southeast Alaska. Juneau, Alaska's state capital, lies approximately 900 air miles northwest of Seattle and 600 air miles southeast of Anchorage. The City and Borough is comprised of three communities: Juneau, Auke Bay, and Douglas. According to the 2010 Census, the City and Borough of Juneau had a population of 31,275, accounting for 43 percent of the population in Southeast Alaska. Alaska Natives comprised almost 12 percent of the total population (U.S. Census Bureau 2011).

Originally, Tlingit Indians made seasonal and permanent villages along the north and south coast near the present site of Juneau. Gold discovered in the Juneau area started the mining town in 1880 and the settlement grew rapidly. Two of the world's largest lode gold mines produced over $180 million in gold before finally closing in 1944. The state capital was moved from Sitka to Juneau in 1906 while Alaska was still a territory. Alaska became the 49th State in 1959. Juneau has developed as a government and regional services center, with added economic contributions from fishing and tourism. Juneau and Douglas participate in an active local Fish and Game Advisory Committee (ADF&G 2015a).

The population of Juneau has grown steadily since 1970, almost doubling between 1970 and 1990 and increasing a further 15 percent between 1990 and 2000. The population in Juneau has fluctuated since 2000 but generally continued to grow, increasing by approximately 8 percent between 2000 and 2014 (Figure 3.23-28). Total estimated population was 33,026 in Juneau in 2014 (Alaska DOL 2015b). A total of 4,751 students were enrolled in the Juneau School District in 2014. Despite the continued growth in population, school enrollment in Juneau has decreased since 2000, dropping from 5,483 enrolled students (Table 3.23-9).

Figure 3.23-28
Juneau Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The Juneau economy is primarily based on government, tourism, support services for logging, commercial fishing and fish processing, and mining (Himes-Cornell et al. 2013). The State, City and Borough of Juneau, the Juneau School District, tribal government, and federal agencies provide over half of the employment in the community (Himes-Cornell et al. 2013; Alaska DOL 2015d). As the State capital, Juneau is the home of the State legislators and their staff during the legislative season (January to April).

With over one million visitors between May and September, Juneau is the most-visited community in the region (Dugan et al. 2009). Tourism is thus a significant part of the economy during the summer months providing an estimated $130 million in income. Juneau is an important cruise ship docking location due to the local attractions: Mendenhall Glacier, Juneau Icefield, Tracy Arm Fjord Glacier, and the Mount Roberts Tram. While tourism in Juneau is dominated by cruise ships, a recent study noted that a substantial number of independent unguided travelers also make their way through Juneau in pursuit of hiking, kayaking, boating, hunting, and other outdoor activities (Dugan et al. 2009). The six major cruise lines who dock at Juneau each offer 34 to 37 shore excursions for purchase on the ship or before the cruise begins.

Estimated gross fishing earnings of local residents exceeded $20 million in 2013 (ACFEC 2015). Fish processing facilities in Juneau handled over 7 million pounds of seafood in 2008, and the Macaulay Salmon Hatchery produces over 52 million salmon annually (Himes-Cornell et al. 2013). The Hecla Mining Company's Greens Creek Mine, the largest silver mine in North America, produces gold, silver, lead and zinc. In addition, Coeur Mining's Kensington Gold Mine north of Juneau, located on private and NFS lands within the City and Borough of Juneau, produces gold—approximately 5,130 pounds in 2012 (Alaska DNR 2015).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. An estimated 5 percent of the labor force in Juneau was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $81,490, compared to the state median of $70,760 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	401	3
Construction	803	5
Manufacturing	260	2
Trade, Transportation and Utilities	2961	19
Information	255	2
Financial Activities	559	4
Professional and Business Services	850	5
Educational and Health Services	1570	10
Leisure and Hospitality	1282	8
State Government	4009	25
Local Government	2270	14
Other	538	3
Unknown	7	0
Total Employment	**15,765**	**100**

Source: Alaska DOL 2015d

Juneau is connected to the Alaska Electric Light and Power Company (AEL&P) system that also includes Douglas Island, Auke Bay, and Greens Creek. Five hydropower projects feed into the AEL&P grid serving Juneau, including Salmon

Creek, Gold Creek, Annex Creek, Lake Dorothy, and Snettisham (Table 3.12b-2). Residential rates for 2011 before and after the application of PCE payments were the same at 12 cents/kWh (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 10 cents/kWh and 9 cents/kWh, respectively. Juneau Hydropower, Inc. has proposed a hydroelectric project on Sweetheart Lake (Table 3.12b-3).

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Juneau in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-29. This area contains 2,013,397 acres of NFS land (among other land ownerships). Table 3.23-30 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Juneau, with Alternatives 1, 2, 3, and 5 potentially harvesting less than 0.1 percent of the total NFS lands in the Juneau community use area, and no harvesting in this area occurring under Alternative 4. Harvest activities could have localized effects if they coincide with a particular location favored by Juneau residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case for all of the alternatives except for Alternative 4.

Figure 3.23-29
Juneau's Community Use Area

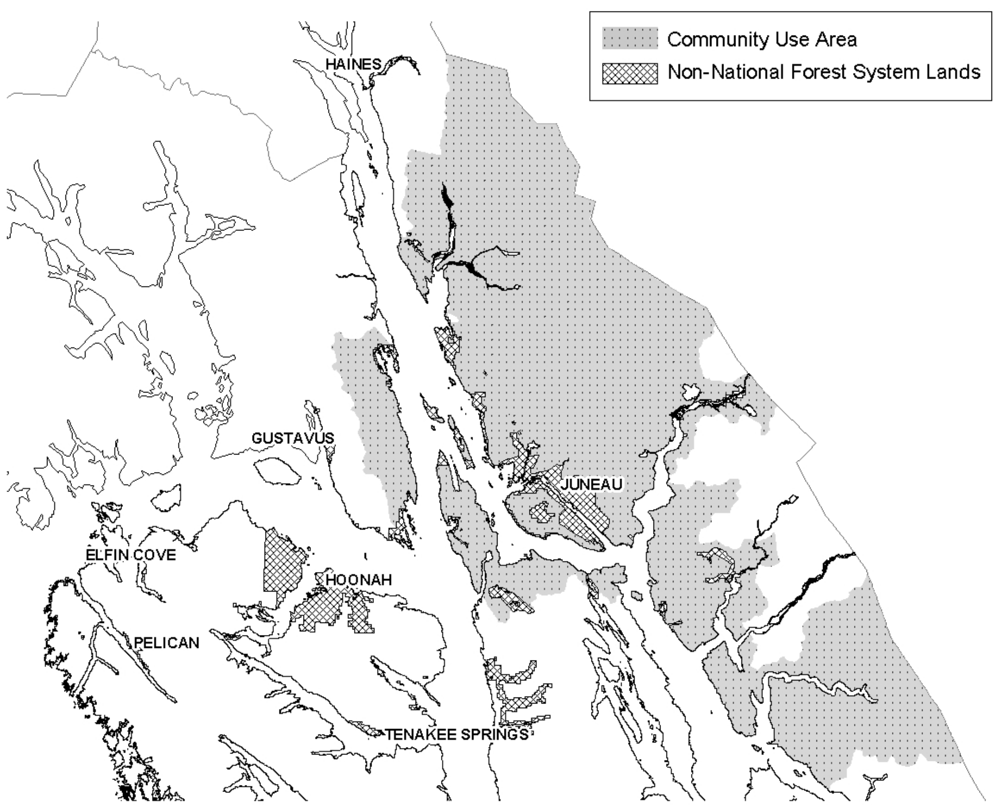


Table 3.23-30
Estimated Maximum Harvest (acres) over 100 Years in Juneau's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	9	632	279	0	483
Old Growth	632	284	0	0	437
Total	**641**	**916**	**279**	**0**	**920**
Harvest as a Percent of Total NFS Lands in the Community Use Area	< 0.1%	< 0.1%	< 0.1%	0.0%	< 0.1%

Economy

As the State capital, government is important to Juneau. Besides changes in government employment, Juneau is most likely to be affected by changes in mining, recreation and tourism, and commercial fishing. None of the alternatives are expected to affect these aspects of the local economy.

The proposed hydroelectric projects (Annex Creek and Sweetheart Lake) that would serve Juneau are located in a Semi-Remote Recreation LUD and Inventoried Roadless Area 302. Semi-Remote Recreation is considered a TUS "window" under the 2008 Forest Plan, an area potentially available for the location of transportation and utility corridors and sites. This classification and the standards and guidelines in the 2008 Forest Plan would continue to apply under Alternative 1. Under Alternatives 2 through 5, energy projects would be managed under the Renewable Energy Plan Components identified in Chapter 5 of the proposed amended Forest Plan.

Subsistence

Juneau is not classified as a subsistence community; however, many residents use the surrounding Tongass for sport hunting and fishing. The City and Borough of Juneau had a total estimated population of 33,026, accounting for approximately 44 percent of the population in Southeast Alaska (Alaska DOL 2014d). Given the non-subsistence status of the community and its large size, no attempt is made here to summarize the WAAs that community residents use to hunt deer. The following paragraphs do, however, summarize the findings of the 1997 EIS and provide a general overview of the likely impacts of the current alternatives.

The majority of deer harvest by Juneau residents likely takes place within the community's identified use area (Figure 3.23-29), which is mainly located within GMU 1C. Deer populations in GMU 1C have historically fluctuated with periodic severe winter weather, most recently during the winter of 2006-2007. The snow pack led to a substantial deer die off, and opportunities to harvest deer will likely improve in the coming years if winter weather isn't too severe (Harper 2013).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted by all rural hunters in the short and long terms. However, adding Juneau residents and other non-rural hunters, demand would exceed the capability of the habitat to produce deer populations sufficient to avoid effects on hunter success in both the short and long terms. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary, and would target urban residents before any restrictions were considered for rural hunters.

In summary, use of most subsistence resources by Juneau residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term under all alternatives.

Kake

Affected Environment

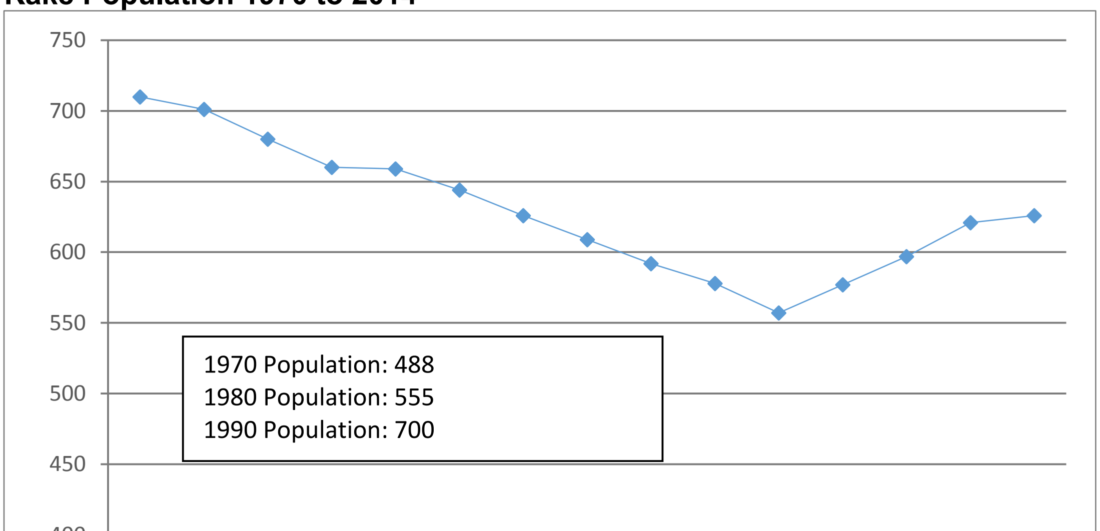
Overview and Demographic Characteristics

Kake is located on west Kupreanof Island, along Keku Strait, 38 air miles northwest of Petersburg. Historically, Tlingit people of the Kake (Keex) Kwaan claimed 2,003,000 acres of territory, including the upper halves of Kuiu, Kupreanof, and Mitkof Island, the eastern shore of Baranof Island and the southern shore of Admiralty Island. The arrival of early European explorers and traders resulted in occasional confrontations between Native Tlingits and foreigners. Escalating tensions led to the U.S. Navy shelling several Kake villages and destroying their homes, boats, and stored foods. The inhabitants of multiple villages subsequently consolidated at the current site of Kake, with further consolidation of Kake villages taking place in the 1880s.

A government school and store and Society of Friends mission were established in Kake in 1891. A post office followed in 1904 and the first cannery was built near Kake in 1912. Today, Kake remains a primarily Tlingit village with a fishing, logging, and subsistence lifestyle. Traditional customs are important to the Kake people. The world's largest totem pole stands on a bluff overlooking town (Himes-Cornell et al. 2013). Kake is a first-class city and is not located in an organized borough.

The population of Kake, which increased by 56 percent between 1970 and 1990, remained fairly constant between 1990 and 2000, and decreased by an estimated 153 people or 22 percent between 2000 and 2010 (Figure 3.23-30). Population estimates developed by the Alaska DOL (2015a) suggest that the population in Kake has increased since 2010, with a total estimated population of 626 in 2014. A total of 110 students were enrolled in the Kake City School District in 2014, up from 85 students in 2010 (Table 3.23-9).

Figure 3.23-30
Kake Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Kake	710	701	680	660	659	644	626	609	592	578	557	577	597	621	626

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Kake's economy has been traditionally based on forest and fisheries resources and subsistence activities. According to a survey conducted by the Alaska Fisheries Science Center in 2011, community leaders indicated that this continues to be the case with the current economy dependent on logging, fishing, ecotourism, and sport hunting and fishing. Subsistence remains an essential part of the local way of life, with deer, halibut, salmon, and black sea weed identified as the most important subsistence resources (Himes-Cornell et al. 2013). Shellfish, bear, waterfowl, and berries are also important food sources. The City of Kake, the school district, and Kake Tribal Corporation are the largest employers in the community. The Gunnock Creek Hatchery, a non-profit organization, operates a salmon hatchery to assist in sustaining the salmon fishery in the area and provides some local employment (Himes-Cornell et al. 2013).

Community leaders indicated in a recent survey by the Alaska Fisheries Science Center that current challenges for Kake's fishing economy include high costs of electricity, fuel, and labor, and shipping constraints for delivering fresh products to market ((Himes-Cornell et al. 2013).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Approximately 21 percent of the labor force in Kake was identified as unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $38,750, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	24	9
Construction	18	7
Manufacturing	39	15
Trade, Transportation and Utilities	36	14
Information	2	1
Financial Activities	9	4
Professional and Business Services	4	2
Educational and Health Services	26	10
Leisure and Hospitality	1	0
State Government	2	1
Local Government	91	35
Other	6	2
Unknown	0	0
Total Employment	**258**	**100**

Source: Alaska DOL 2015d

Kake has some of the highest electric rates in Alaska due to the use of diesel generated power. Residential rates for 2011 before and after the application of PCE payments were 62 cents/kWh and 22 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 62 cents/kWh (Table 3.12b-3). The proposed Kake to Petersburg Intertie Project, which is currently undergoing NEPA review, would connect Kake to the SEAPA system. The SEAPA system is sourced primarily from hydroelectric power (Swan Lake and Tyee Lake) and connects Ketchikan, Petersburg, and Wrangell.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Kake in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-31. This area contains 454,186 acres of NFS land (among other land ownerships). Table 3.23-31 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Kake, ranging from about 4.7 percent (Alternative 5) to 5.3 percent (Alternatives 2 and 4). Harvest activities could have localized effects if they coincide with a particular location favored by Kake residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2, 3, and 4; however, it may be noted that Alternative 1 (which would have less potential total suitable harvest compared to Alternatives 2, 3, and 4) would have the largest potential old-growth harvest in this area (see Table 3.23-31).

Figure 3.23-31
Kake's Community Use Area

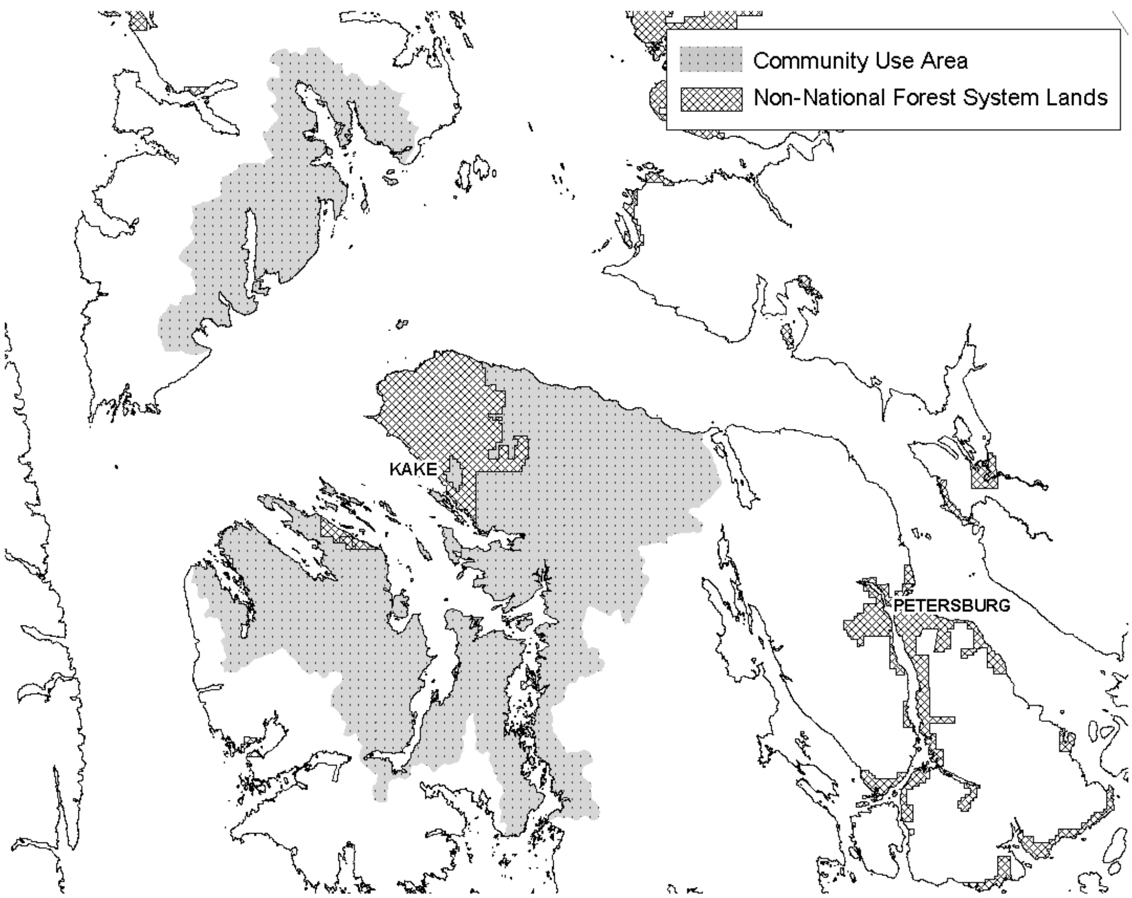


Table 3.23-31
Estimated Maximum Harvest (acres) over 100 Years in Kake's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	16,035	21,099	20,990	15,451	17,137
Old Growth	5,777	2,790	2,418	4,111	3,996
Total	**21,812**	**23,889**	**23,408**	**23,889**	**21,132**
Harvest as a Percent of Total NFS Lands in the Community Use Area	4.8%	5.3%	5.2%	5.3%	4.7%

Economy

Kake is a traditional native community where commercial fishing, timber harvesting, and subsistence use are important. For subsistence use, west Kupreanof and north Kuiu Islands are some of the most important areas. Employment in the commercial fishing sector is not expected to be affected under any of the alternatives.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 52 percent of the total edible pounds of subsistence resources harvested by Kake households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 60 percent of per capita subsistence harvest in Kake in 1996 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 24 percent of the total edible pounds of subsistence resources harvested by Kake households (Kruse and Frazier 1988). Deer accounted for 28 percent of per capita subsistence harvest by Kake residents in 1996 (ADF&G 2014).

Kake residents harvest deer on Admiralty Island and Kupreanof Island, which are included in GMU 4 and GMU 3, respectively. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). The deer populations within GMU 3 have historically fluctuated, with high and low extremes. Between 1994 and 2011, deer harvest in GMU 3 ranged from a low of 333 to a high of 1,119 (Harper 2013). As of 2013, the harvest level was about 100 deer below the previous 10-year mean (Harper 2013).

Five WAAs account for the majority (76 percent) of deer harvest by Kake Residents (Table 3.23-32). The Kake portion ranges from about 11 percent (WAA 1420) to 60 percent (WAA 5132) of the total harvest and from 19 percent to 68 percent of the rural hunter harvest in these WAAs. About 35 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

Table 3.23-32
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Kake Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013[2]			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Kake Residents	All Rural Hunters[3]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1420	30	158	276	49%	45%	46%	46%	46%	45%
3940	26	61	75	93%	93%	93%	93%	93%	93%
3939	19	71	105	100%	100%	100%	100%	100%	100%
4041	5	16	19	91%	91%	91%	91%	91%	91%
5132	5	7	8	70%	71%	71%	71%	71%	71%

[1] Calculated based on harvest where location is known.
[2] 2008 data not available for Kake residents.
[3] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

Four out of the five WAAs heavily used by Kake residents would not be affected under all alternatives (Table 3.23-32). Deer habitat capability in WAA 1420, which is currently at less than half of 1954 levels, would be further reduced by 3 to 4 percent under all alternatives (Table 3.23-32).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted in the Kake community use area by Kake residents, all rural hunters, and all hunters in the short term, and Kake residents and, under all but one of the alternatives, all rural hunters over the long term. All of the 1997 alternatives included substantially higher levels of timber harvest in Kake's community use area than the alternatives considered in this EIS (approximately 197 to 452 percent higher). Given this and the minimal effect shown in Table 3.23-32, it is likely all of the current alternatives would provide sufficient habitat capability over the long term for deer hunted by Kake residents and all rural hunters. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to produce deer populations sufficient to avoid effects on hunter success for all hunters in the long term. It is possible this would still be the case under all current alternatives.

In summary, use of most subsistence resources by Kake residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer in one of the WAAs hunted by Kake residents may be affected to the point that some restriction in hunting might be necessary over the long term, particularly for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Kake's subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity. Such impacts would be relatively low based on the limited accessibility of these areas to non-local hunters.

Kasaan

Affected Environment

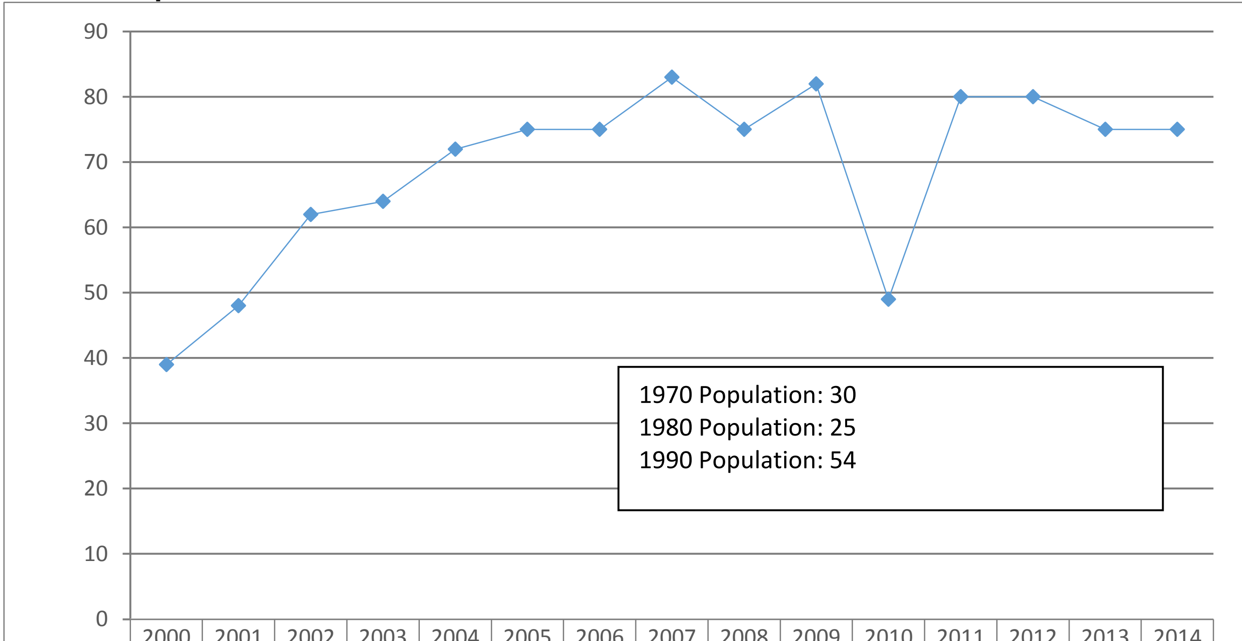
Overview and Demographic Characteristics

Kasaan is a small village located on the eastern side of Prince of Wales Island. Originally Tlingit territory, Kasaan gets its name from the Tlingit word meaning "pretty town." Haidas migrated north from the Queen Charlotte Islands in the early 1700s to the Island and established the village known as "Old Kasaan." In 1898 the Copper Queen mine, camp, sawmill, post office, and store were built on Kasaan Bay, and the Haida people subsequently relocated to this new site in 1904.

A Federally recognized tribe, the Organized Village of Kasaan, is located in the community. Traditionally a Haida village, the population now includes Tlingits, Eskimos, and non-Natives, as well as Haidas. The community had a total estimated population of 75 in 2014, with the population almost doubling between 2000 and 2014 (Figure 3.23-32). Alaska Natives comprise about 35 percent of the local population, with 53 percent of the population identifying as White in the 2010 Census (U.S. Census Bureau 2011).

Kasaan's population grew by 80 percent between 1970 and 1990. The population declined between 1990 and 2000, decreasing by 15 people or 28 percent. The population has nearly doubled since 2000, with an estimated 75 people living in Kasaan in 2014 (Alaska DOL 2015b). A total of 12 students were enrolled in the Barry C. Stewart Kasaan School in 2014 (Table 3.23-9).

Figure 3.23-32
Kasaan Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Kasaan	39	48	62	64	72	75	75	83	75	82	49	80	80	75	75

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The majority of local residents are employed in the public sector. Two residents held commercial fishing permits and most villagers participate in subsistence for food sources, harvesting deer, salmon, halibut, shrimp, and crab. One tourism-related business operates in the village, providing meals and lodging for visitors (Dugan et al. 2009). Local residents use parts of the project area for subsistence and recreation activities.

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Approximately 19 percent of the labor force in Kasaan was identified as unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $43,750, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	1	4
Construction	1	4
Manufacturing	0	0
Trade, Transportation and Utilities	2	8
Information	0	0
Financial Activities	0	0
Professional and Business Services	2	8
Educational and Health Services	0	0
Leisure and Hospitality	2	8
State Government	2	8
Local Government	16	62
Other	0	0
Unknown	0	0
Total Employment	**26**	**100**

Source: Alaska DOL 2015d

Kasaan is part of the AP&T system that connects the community with the communities of Coffman Cove, Craig, Hollis, Hydaburg, Klawock, and Thorne Bay. Electricity is diesel generated. Residential rates for 2011 before and after the application of PCE payments were 24 cents/kWh and 16 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 24 cents/kWh.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Kasaan in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-33. This area contains 540,324 acres of NFS land (among other land ownerships). Table 3.23-33 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Kasaan, ranging from about 2.1 percent (Alternative 1) to 3.4 percent (Alternative 3). Harvest activities could have localized effects if they coincide with a particular location favored by Kasaan residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternative 2; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-33).

Figure 3.23-33
Kasaan's Community Use Area

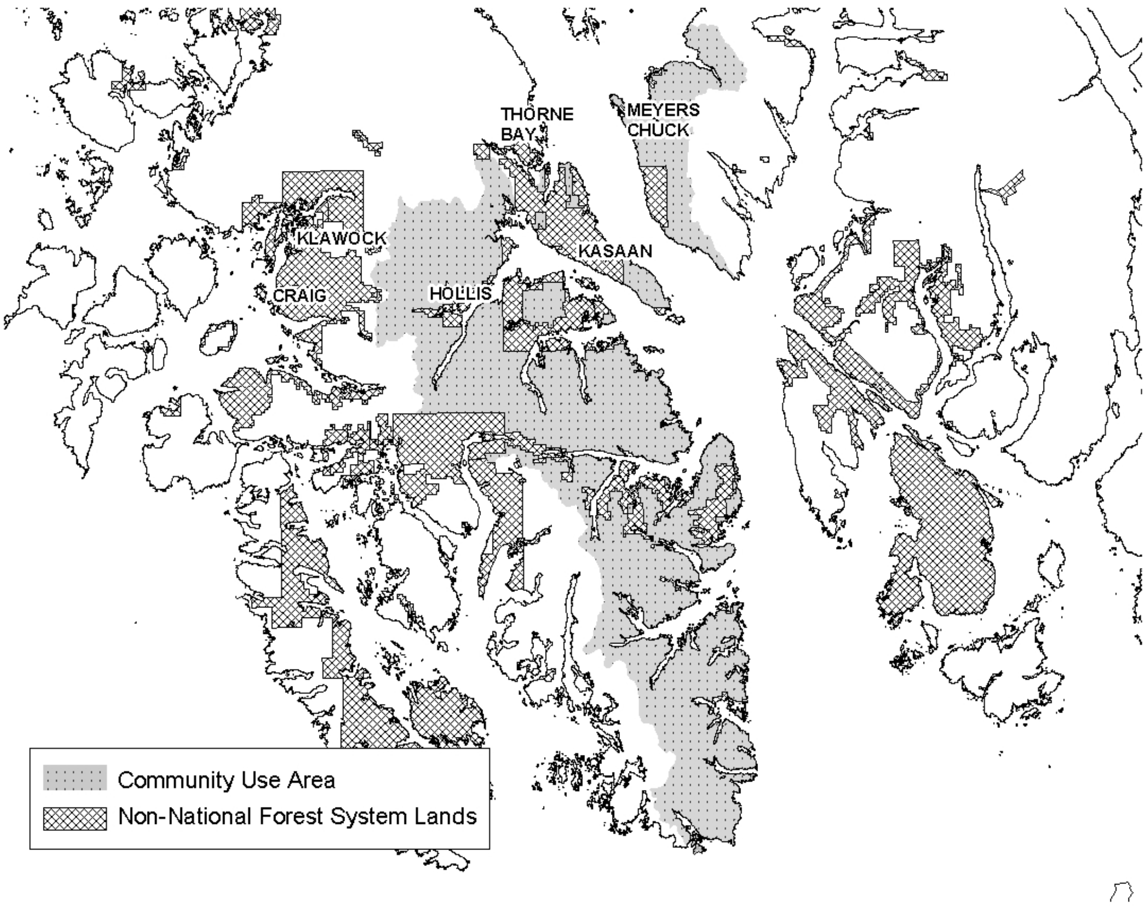


Table 3.23-33
Estimated Maximum Harvest (acres) over 100 Years in Kasaan's Community Use Area by Alternative

	Alternative				
	1	2	3	4	5
Young Growth	8,882	15,850	15,342	10,666	11,408
Old Growth	2,468	1,398	3,082	1,893	1,574
Total	**11,351**	**17,248**	**18,424**	**12,559**	**12,982**
Harvest as a Percent of Total NFS Lands in the Community Use Area	2.1%	3.2%	3.4%	2.3%	2.4%

Economy

Subsistence use and commercial fishing are the primary elements of Kasaan's economy. Commercial fisheries employment is not likely to be affected under any of the alternatives. Much of the timber harvest in the vicinity of Kasaan has historically been on private land owned by the Kasaan Native Corporation. This land would not be affected under any of the alternatives.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 74 percent of the total edible pounds of subsistence resources harvested by Kasaan households (Kruse and Frazier 1988) and 75 percent of per capita harvest in 1998 (ADF&G 2014).

The 1988 TRUCS survey found that deer account for 22 percent of the total edible pounds of subsistence resources harvested by Kasaan households (Kruse and Frazier 1988). Deer accounted for 15 percent of per capita subsistence harvest by Kasaan residents in 1998 (ADF&G 2014).

The majority of deer harvest by Kasaan residents takes place near the community on north Prince of Wales Island, which is included in GMU 2. Following a deer population decline 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Kasaan residents, total annual deer harvest is generally low, but has increased over the past decade. In 2013 deer harvest was more than four times as high (23 more deer) as it was in 2004 (ADF&G 2015b).

Residents of Kasaan harvest the majority (87 percent) of their deer from two WAAs (Table 3.23-34). The Kasaan portion makes up 2 percent of the total combined harvest and 4 percent of the rural hunter harvest in these WAAs. About 42 percent of the combined harvest in these WAA is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

Table 3.23-34
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Kasaan Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Kasaan Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1315	9	201	317	56%	52%	52%	53%	53%	51%
1214	4	120	235	77%	70%	72%	72%	72%	71%

[1] Calculated based on harvest where location is known
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

Both WAAs are in areas with substantial past timber harvest and, therefore, deer habitat capabilities are currently estimated to be considerably below 1954 levels (Table 3.23-34). Under each of the alternatives, additional harvest would occur that would further reduce habitat capabilities after 100 years by 5 to 7 percent (Table 3.23-34).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted in the Kasaan community use area by Kasaan residents and all rural hunters in the short term, as well as Kasaan residents in the long term. All of the 1997 alternatives included substantially higher levels of timber harvest in Kasaan's community use area than the alternatives considered in this EIS (approximately 4 to 13 times higher). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the short and long term for deer hunted by Kasaan residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to support deer populations sufficient to avoid effects on hunter success for all rural hunters and all hunters in the long term. This may still be the case under all current alternatives.

In summary, use of most subsistence resources by Kasaan residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. Kasaan is currently competing with other communities in their subsistence use areas and this is likely to continue to be the case under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Kasaan's subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Ketchikan

Affected Environment

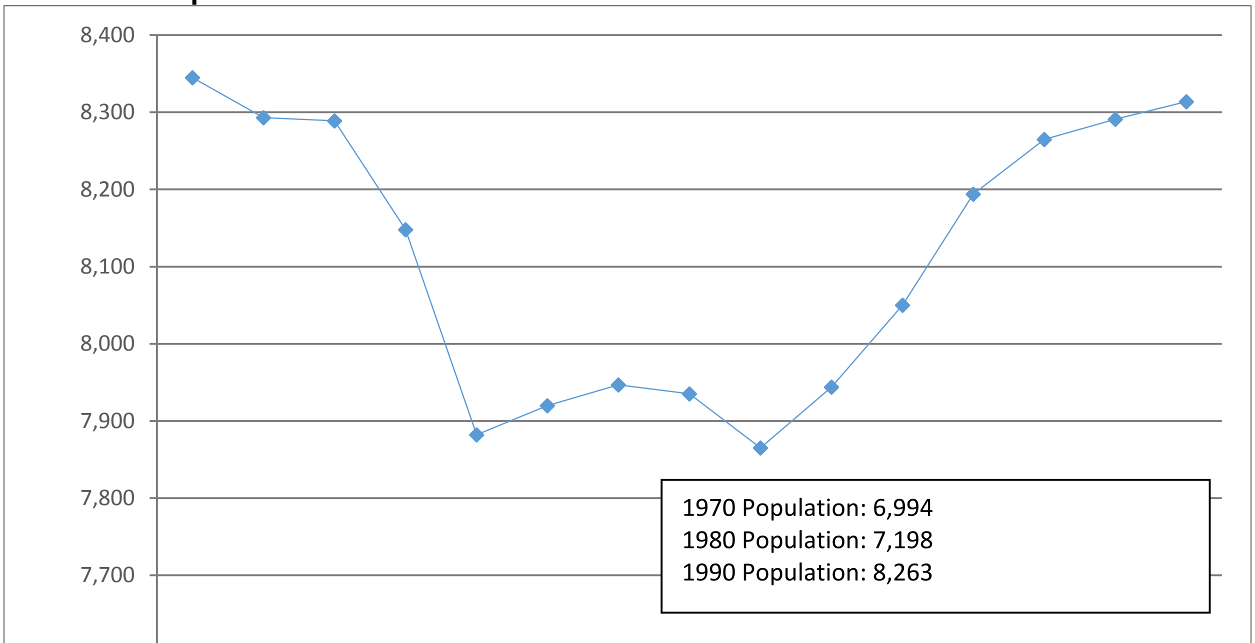
Overview and Demographic Characteristics

Ketchikan is located on Revillagigedo Island near the southernmost boundary of Alaska. Ketchikan lies approximately 679 miles north of Seattle and 235 miles south of Juneau. It is the first Alaska port-of-call for northbound ships. According to the 2010 Census, Ketchikan had a population of 8,050, with Alaska Natives comprising 17 percent of the total (U.S. Census Bureau 2011).

The Ketchikan area was a summer fishing camp for the Tlingit Alaska Natives. Their name for the area, "kitschk-him," meant "thundering wings of an eagle." Its abundant fish and timber resources eventually attracted non-Natives, with the first cannery opening in Ketchikan in 1886 and four more by 1912. Nearby gold and copper discoveries briefly brought activity to Ketchikan during the late 1890s, but timber and fishing became the chief economic forces at the turn of the century and have remained important. The 1954 construction of a pulp mill in Ward Cove continued a tradition begun by the 1903 opening of Ketchikan Spruce Mills, which operated for more than 70 years. Ketchikan has also remained an important hub for fishing, both for fish processing and as home to those with commercial fishing permits (295 area residents in 2013).

The population of Ketchikan increased by 18 percent between 1970 and 1990 and has remained relatively stable since, with the exception of noticeable drops in 2004 and 2008 (Figure 3.23-34). The population has been increasing since 2008, with an estimated population of 8,314 in Ketchikan in 2014 (Alaska DOL 2015b). A total of 2,360 students were enrolled in the Ketchikan Gateway Borough School District in 2014 (Table 3.23-9).

Figure 3.23-34
Ketchikan Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ketchikan	8,345	8,293	8,289	8,148	7,882	7,920	7,947	7,935	7,865	7,944	8,050	8,194	8,265	8,291	8,314

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Ketchikan is an industrial center and a major port of entry in Southeast Alaska. It has a diverse economy, supported by a large fishing fleet, fish processing facilities, timber and tourism. The estimated gross fishing earnings of local residents neared $23 million in 2013 (ACFEC 2015). Four canneries, three cold storage facilities, and a fish processing plant support the fishing industry in summer months.

While the timber industry remains important to the economy and a home base for several timber companies, the Ketchikan Pulp Corporation's pulp mill closed in March 1997. Closure of the mill, the community's largest employer, resulted in the loss of 500 direct jobs, many of which were high paying and year round. The Pacific Log and Lumber sawmill, which in 2006 employed 20 people, is also now decommissioned (Parrent and Grewe 2014). Employment data compiled by the Alaska DOL indicate that employment in the lumber and wood products sector declined from 11.8 percent of total wage and salary employment in 1996 to 5.7 percent in 1999 (Baker 2001), and now represents only one percent of employment (Alaska DOL 2015d).

Tourism and local retail are growing economic sectors. In 2009, an estimated 937,419 people visited Ketchikan on cruise ships (Himes-Cornell et al. 2013). Ketchikan has a well-developed network and system of shore-excursions, with 47 shore excursions advertised by the various cruise lines that dock there (Dugan et al. 2009). Most nature-based activities that originate in Ketchikan fell into four general categories: flightseeing, marine charters, adventure experiences, and general sightseeing. In all cases, the majority of clients participating in these activities were cruise ship passengers (Dugan et al. 2009).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Approximately 11 percent of the labor force in Ketchikan was identified as unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014; Alaska DOL 2015d). Median household income was $52,266, compared to the state median of $70,760 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	25	1
Construction	180	5
Manufacturing	262	7
Trade, Transportation and Utilities	914	25
Information	47	1
Financial Activities	194	5
Professional and Business Services	127	4
Educational and Health Services	466	13
Leisure and Hospitality	422	12
State Government	353	10
Local Government	564	16
Other	59	2
Unknown	0	0
Total Employment	**3,613**	**100**

Source: Alaska DOL 2015d

Ketchikan is served by the SEAPA system that connects Ketchikan, Petersburg, and Wrangell. The Swan Lake and Tyee Lake hydroelectric projects provide electricity to this SEAPA network (Table 3.12b-2). Residential rates for 2011 before and after the application of PCE payments were both 10 cents/kWh (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 10 cents/kWh and 8 cents/kWh, respectively.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Ketchikan in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-35. This area contains 1,975,122 acres of NFS land (among other land ownerships). Table 3.23-35 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Ketchikan, ranging from about 1.3 percent (Alternative 1) to 2.0 percent (Alternative 3). Harvest activities could have localized effects if they coincide with a particular location favored by Ketchikan residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternative 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-35).

Figure 3.23-35
Ketchikan's Community Use Area

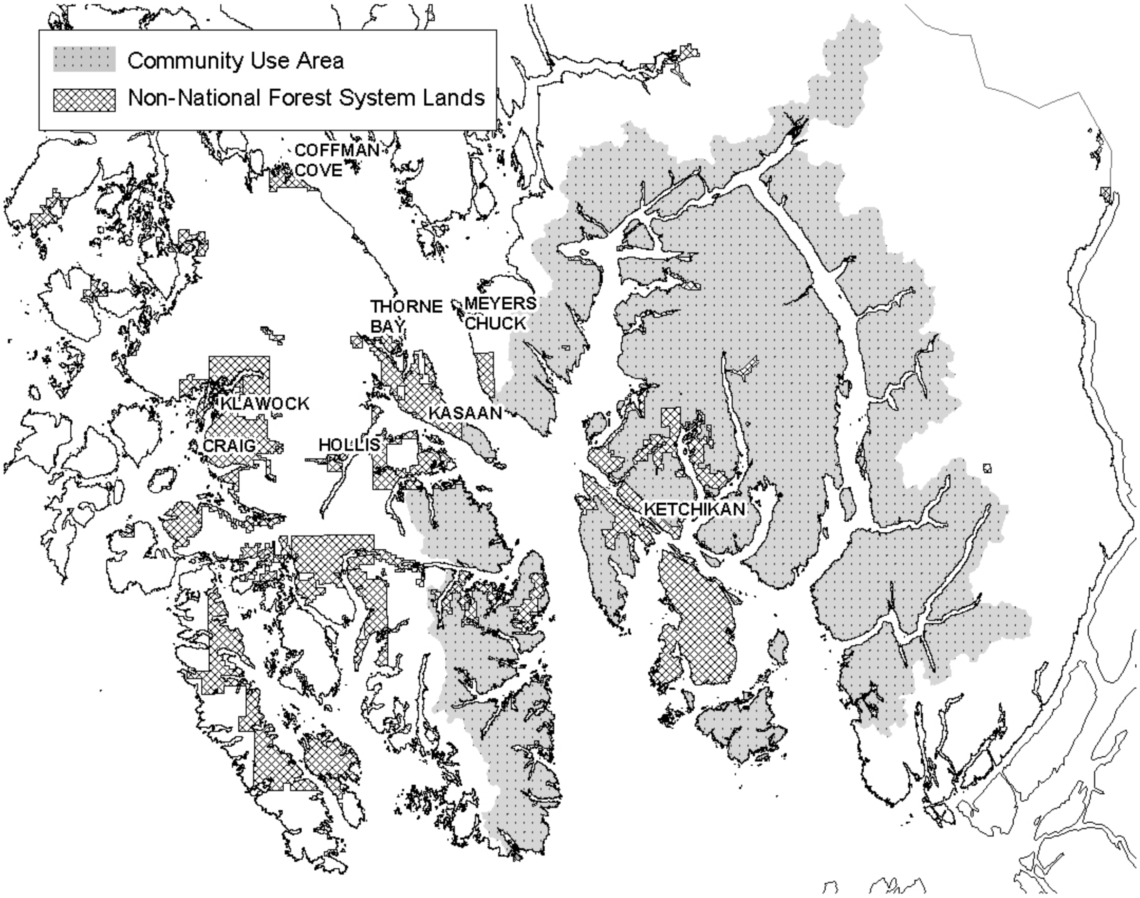


Table 3.23-35
Estimated Maximum Harvest (acres) over 100 Years in Ketchikan's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	20,284	33,533	33,248	26,392	25,562
Old Growth	5,393	2,639	5,735	4,411	3,669
Total	**25,678**	**36,172**	**38,983**	**30,804**	**29,231**
Harvest as a Percent of Total NFS Lands in the Community Use Area	1.3%	1.8%	2.0%	1.6%	1.5%

Economy
Ketchikan would be primarily influenced by changes in timber processing, recreation and tourism use, commercial fishing, and recreation opportunities. Potentail impacts on timber processing are discussed in the *Regional and National Economy* section, above. None of the alternatives are expected to

affect recreation and tourism-related employment or employment in the commercial fisheries sector.

Subsistence

Ketchikan is not classified as a subsistence community; however, many residents use the surrounding Tongass for hunting and fishing. Given the non-subsistence status of the community and its large size, no attempt is made here to summarize the WAAs that community residents use to hunt deer. The following paragraphs do, however, summarize the findings of the 1997 EIS and provide a general overview of the likely impacts of the current alternatives.

The majority of deer harvest by Ketchikan residents likely takes place within the community's identified use area (Figure 3.23-15), which is mainly located within GMU 1A and GMU 2. As of 2013, deer numbers were at very low levels throughout most of GMU 1A and were no longer meeting local hunter demands or established deer harvest objectives (Harper 2013). Though not closed, starting in 2011 the deer hunting season was shortened to August 1 through November 30 instead of continuing through December. Hunters are known to be shifting efforts to other more productive areas, such as nearby GMU 2, leading to less hunter effort and fewer deer harvested in GMU 1A (Harper 2013). In GMU 2, following a deer population decline from 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted by all hunters in the short term. However, projected deer harvest in the long term by Ketchikan residents, all rural hunters, and all hunters exceeded the level that is both sustainable and provides a reasonably high level of hunter success for their effort. If a restriction were necessary, sport hunting by Ketchikan residents would be restricted before subsistence hunting by rural hunters is restricted.

In summary, use of most subsistence resources by Ketchikan residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all current alternatives.

Klawock

Affected Environment

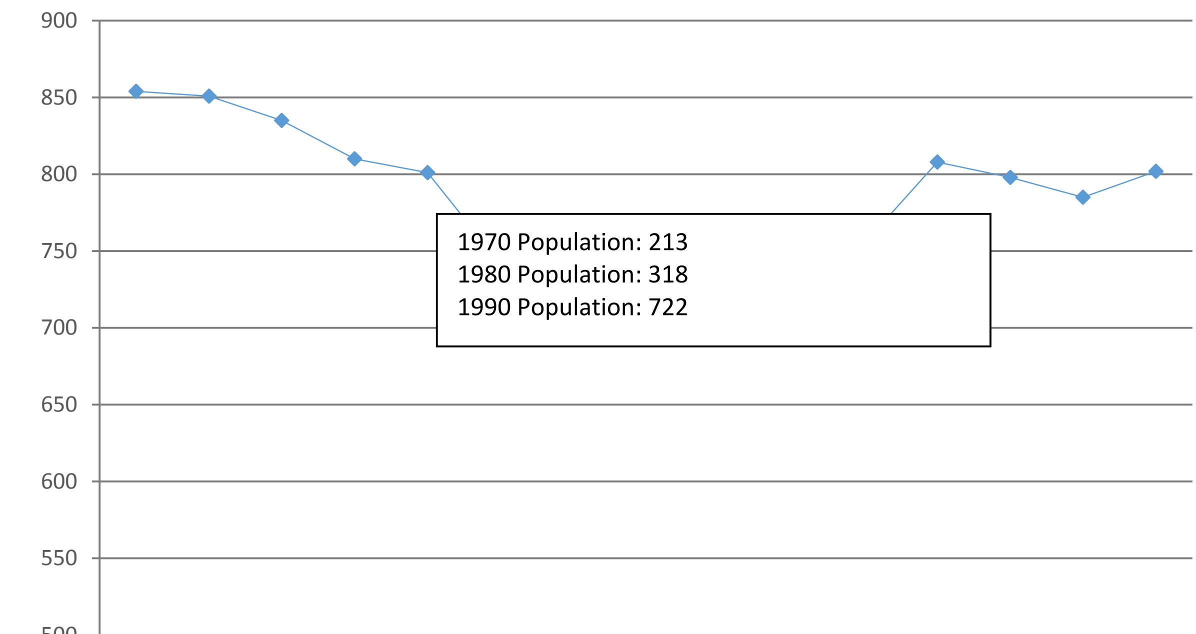
Overview and Demographic Characteristics

Klawock, located on the west coast of Prince of Wales Island, is the second largest community on the island. The mouth of the Klawock River, where the village of Klawock is now located, has been the site of Tlingit occupation for at least 600 years and now serves as the center of the Tlingit population on west Prince of Wales Island. A trading post and salmon saltery were established in the community in 1868, and the first cannery in Alaska was built here by a San Francisco firm in 1878. Klawock was incorporated as a first-class city in 1929.

A federally recognized tribe—the Klawock Cooperative Association—is located in the community. The community had a total population of 802 in 2014, approximately 52 or 6 percent fewer residents than 14 years earlier in 2000 (Figure 3.23-36). Population has fluctuated over this period, dropping to a low of 697 residents in 2007. Alaska Natives comprise about 48 percent of the local population, with 37 percent of the population identifying as White in the 2010 Census (Table 3.23-8).

School enrollment in Klawock has declined since 2000, dropping from 190 students in 2000 to 121 students in 2014 (Table 3.23-9).

Figure 3.23-36
Klawock Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Klawock	854	851	835	810	801	742	741	697	723	723	755	808	798	785	802

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The community has been historically dependent on fishing and cannery operations; however, the timber industry has increased in importance with a relatively large number of residents employed in logging and ship loading in the Klawock and Craig area (ADCCED 2011). Viking Lumber is located between Klawock and Craig. A total of 39 residents held commercial fishing permits in 2013 (ACFEC 2015).

Retail trade and services are also important to the economy of Klawock. Many residents of communities on northern Prince Wales, as well as recreationists and tourists shop at the shopping center located in Klawock. There are also three sport fishing lodges that provide charter and accommodation packages, as well as an independent operator offering day charters. Klawock also has two recreational vehicle (RV) parks that mostly serve long-term visitors (Dugan et al. 2009).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Approximately 16 percent of the labor force in Klawock was identified as unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $37,083, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	20	5
Construction	33	8
Manufacturing	28	7
Trade, Transportation and Utilities	90	23
Information	1	< 1
Financial Activities	13	3
Professional and Business Services	7	2
Educational and Health Services	59	15
Leisure and Hospitality	36	9
State Government	9	2
Local Government	92	24
Other	4	1
Unknown	0	0
Total Employment	**392**	**100**

Source: Alaska DOL 2015d

Klawock is part of the AP&T system that connects the community with the communities of Coffman Cove, Craig, Hollis, Hydaburg, Kasaan, and Thorne Bay. Electricity is diesel generated. Residential rates for 2011 before and after the application of PCE payments were 24 cents/kWh and 16 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 24 cents/kWh.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Klawock in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-37. This area contains 767,934 acres of NFS land (among other land ownerships). Table 3.23-36 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. Total areas available for harvest range from about 7.3 percent of the Klawock community use area under Alternative 1 to 9.6 percent under Alternative 2. Harvest activities could have localized effects if they coincide with a particular location favored by Klawock residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-36).

Figure 3.23-37
Klawock's Community Use Area

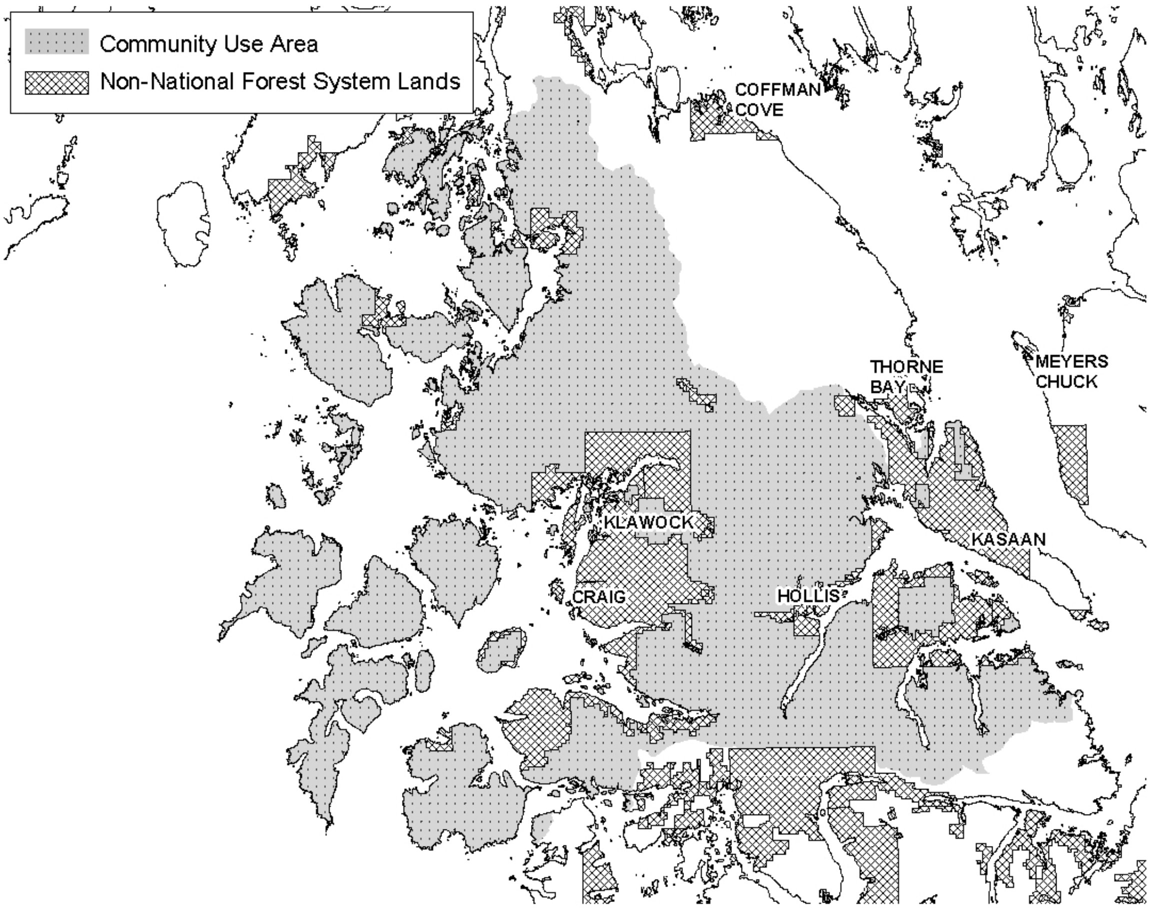


Table 3.23-36
Estimated Maximum Harvest (acres) over 100 Years in Klawock's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	46,810	69,194	67,335	55,276	55,694
Old Growth	9,558	4,602	5,300	7,649	6,362
Total	**56,368**	**73,796**	**72,635**	**62,925**	**62,056**
Harvest as a Percent of Total NFS Lands in the Community Use Area	7.3%	9.6%	9.5%	8.2%	8.1%

Economy

Klawock is a traditional native community. Timber employment, subsistence use, and retail services are most likely to be affected in this community. Viking Lumber, the largest and most modern sawmill in the region, is located between Craig and Klawock. The alternatives would all supply old-growth volume to support operations in Southeast Alaska in the short term, including Viking Lumber, but the amount of old-growth timber available for sale would decrease over time as the Forest Service completes the transition to young growth. The speed of the transition and the relative and absolute volumes of young growth would vary by alternative as discussed in the *Regional and National Economy* section, above.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 75 percent of the total edible pounds of subsistence resources harvested by Klawock households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 71 percent of per capita subsistence harvest in Klawock in 1997 (ADF&G 2014). The 1988 TRUCS study found that deer accounted for 19 percent of the total edible pounds of subsistence resources harvested by Klawock households (Kruse and Frazier 1988). Deer accounted for 15 percent of per capita subsistence harvest by Klawock residents in 1997 (ADF&G 2014).

Klawock residents mainly harvest deer on north Prince of Wales Island, which is included in GMU 2. Following a deer population decline 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Klawock residents, total annual deer harvest has generally increased over the past decade, and in 2013 was 71 percent higher (183 more deer) than in 2004 (ADF&G 2015b).

Residents of Klawock harvest the majority (74 percent) of their deer from eight WAAs (Table 3.23-37). The Klawock portion represents from about 5 percent (WAA 1420) to 34 percent (WAA 1318) of the total harvest and about 9 percent to 42 percent of the rural hunter harvest in these WAAs. About 34 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a limited harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

Most of the WAAs identified in Table 3.23-37 occur in areas with substantial past harvest and, therefore, deer habitat capabilities are currently estimated to be below 1954 levels. Under each of the alternatives, additional harvest would occur that would reduce habitat capabilities after 100 years in all of the WAAs except for one (WAA 1107) by 1 to 8 percent (Table 3.23-37).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted by Klawock residents in the short term and long term. All of the 1997 alternatives included substantially higher levels of timber harvest in Klawock's community use area than the alternatives considered in this EIS (approximately 107 to 325 percent higher). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the short and long term for deer hunted by Klawock residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to support deer populations sufficient to avoid effects on hunter success for all rural hunters and all hunters in both the short and long terms. This may still be the case under all current alternatives.

Table 3.23-37
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Klawock Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Klawock Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1318	67	159	198	90%	83%	85%	85%	85%	85%
1422	65	247	383	57%	49%	52%	51%	51%	51%
1319	28	169	226	74%	68%	68%	70%	70%	70%
1214	26	120	235	77%	70%	72%	72%	72%	71%
1107	22	99	130	99%	99%	99%	99%	99%	99%
1315	21	201	317	56%	52%	52%	53%	53%	51%
1317	19	93	133	58%	56%	56%	56%	57%	57%
1420	15	158	276	49%	45%	46%	46%	46%	45%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

In summary, use of most subsistence resources by Klawock residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary, especially for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within the Klawock subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Metlakatla

Affected Environment

Overview and Demographic Characteristics

Metlakatla is located on Annette Island, 15 miles south of Ketchikan. Believed to have been occupied at one time by Tlingit Indians, Metlakatla was settled in 1887 by Church of England minister William Duncan and about 830 Tsimshian followers from northern British Columbia. In 1891, an Act of Congress declared Annette Island an Indian Reservation (the Annette Island Reserve), the only one in Alaska. This action set aside the reservation for the exclusive use and occupancy by "Metlakatla Indians and such other Natives of Alaska who might join them" (ADF&G 1994).

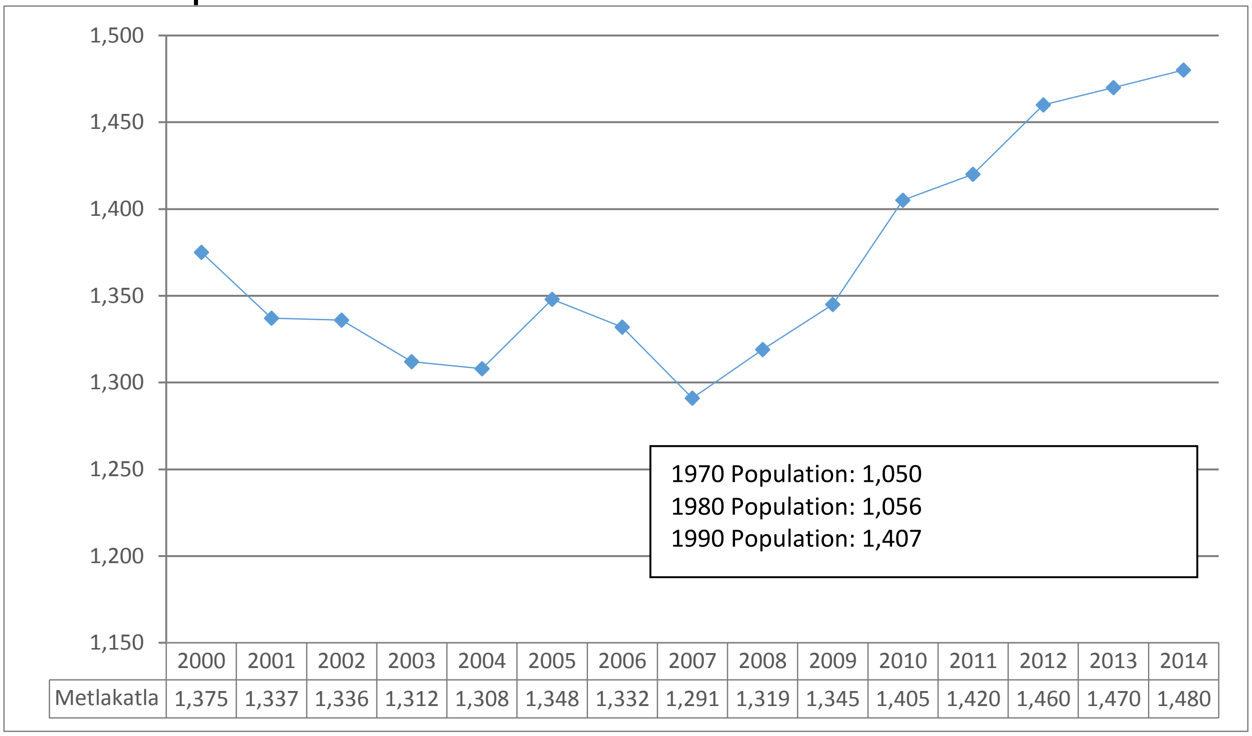
Metlakatla is a traditional Tsimshian community with a subsistence lifestyle. The community was not part of ANCSA. The 86,000-acre Island reservation and surrounding 3,000 feet of coastal waters are not subject to State jurisdiction. The Annette Island Reserve regulates commercial fishing in these waters, and operates its own tribal court system (Alaska DCED 2006).

The population of Metlakatla increased by a third between 1970 and 1990, and has since remained fairly constant. Population has fluctuated over the last 14 years, reaching a low of 1,291 residents in 2007. Population has increased in

Metlakatla since 2007, with an estimated total of 1,407 residents in 2014 (Figure 3.23-38). Alaska Natives comprised 83 percent of the population in 2010 (Table 3.23-8).

A total of 359 students were enrolled in the Annette Island School District in 2014, up from 272 students in 2010 (Table 3.23-9).

Figure 3.23-38
Metlakatla Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Metlakatla is a federal Indian reservation with no local taxes. The economy is based primarily on commercial fishing, fish processing, and services (Himes-Cornell et al. 2013). A total of 42 residents held commercial fishing permits in 2013, with estimated gross earnings of $1.6 million (ACFEC 2015). Metlakatla Indian Community, the largest employer, operates a salmon hatchery on Tamgas Creek, the tribal court, and all local services and utilities (Himes-Cornell et al. 2013). Annette Island Packing Co. is a cold storage facility in Metlakatla owned by the community and is the second largest employer (Himes-Cornell et al. 2013). The school district, Metlakatla Housing Authority, the State, Metlakatla Power & Light, and several private companies are also important employers (Himes-Cornell et al. 2013).

Historically the community's economy was also supported by the timber industry; however, the two sawmills located in Metlakatla are no longer in operation (Himes-Cornell et al. 2013).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. Approximately 15 percent of the labor force in Metlakatla was identified as unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census

Bureau 2014b; Alaska DOL 2015d). Median household income was $49,663, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	1	< 1
Construction	18	3
Manufacturing	3	< 1
Trade, Transportation and Utilities	80	12
Information	0	0
Financial Activities	54	8
Professional and Business Services	4	1
Educational and Health Services	12	2
Leisure and Hospitality	11	2
State Government	16	2
Local Government	489	71
Other	1	< 1
Unknown	0	0
Total Employment	**689**	**100**

Source: Alaska DOL 2015d

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Metlakatla in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-39. This area contains 1,975,123 acres of NFS land (among other land ownerships). Table 3.23-38 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Metlakatla, ranging from about 1.3 percent (Alternative 1) to 2.0 percent (Alternative 3). Harvest activities could have localized effects if they coincide with a particular location favored by Metlakatla residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-38).

Figure 3.23-39
Metlakatla's Community Use Area

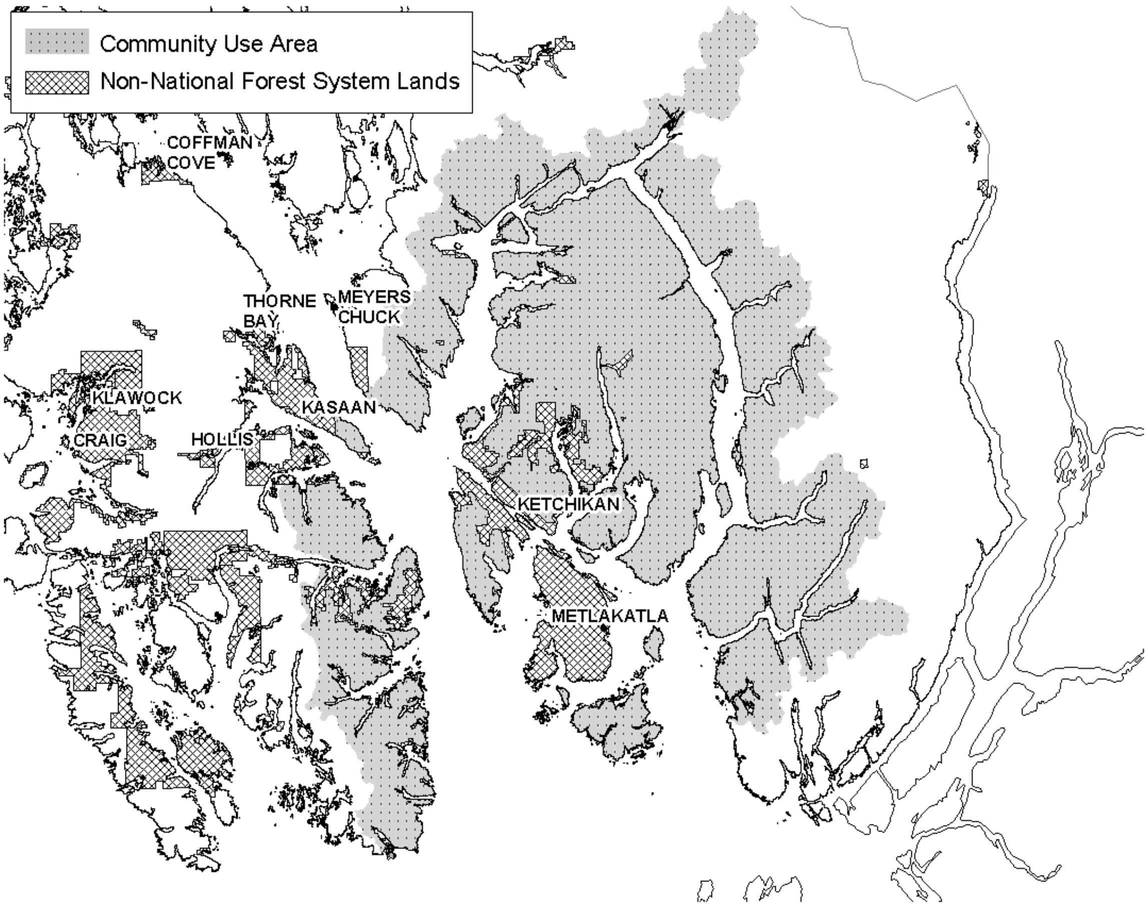


Table 3.23-38
Estimated Maximum Harvest (acres) over 100 Years in Metlakatla's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	20,284	33,533	33,248	26,392	25,562
Old Growth	5,393	2,639	5,735	4,411	3,669
Total	**25,678**	**36,172**	**38,983**	**30,804**	**29,231**
Harvest as a Percent of Total NFS Lands in the Community Use Area	1.3%	1.8%	2.0%	1.6%	1.5%

Economy

Metlakatla could be affected primarily by changes in commercial fishing and subsistence opportunities. Commercial fisheries employment is not likely to be affected under any of the alternatives.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 75 percent of the total edible pounds of subsistence resources harvested by Metlakatla households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 75 percent of per capita subsistence harvest in Metlakatla in 1987 (ADF&G 2014).

The 1988 TRUCS study found that deer account for 15 percent of the total edible pounds of subsistence resources harvested by Metlakatla households (Kruse and Frazier 1988). Deer accounted for 15 percent of per capita subsistence harvest by Metlakatla residents in 1987 (ADF&G 2014).

The majority of deer harvest by Metlakatla residents occurs in the vicinity of the community in GMU 1A and on north Prince of Wales Island in GMU 2. As of 2013, deer numbers were at very low levels throughout most of GMU 1A and were no longer meeting local hunter demands or established deer harvest objectives (Harper 2013). Though not closed, starting in 2011 the deer hunting season was shortened to August 1 through November 30 instead of continuing through December. Hunters are known to be shifting efforts to other more productive areas, such as nearby GMU 2, leading to less hunter effort and fewer deer harvested in GMU 1A (Harper 2013). In GMU 2, following a deer population decline from 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Metlakatla residents, total annual deer harvest fluctuated between 2004 and 2013 with a low of 18 deer in 2011 and a high of 97 the next season in 2012 (ADF&G 2015b). As of 2013, harvest remained about 38 percent higher (12 more deer) than in 2004 (ADF&G 2015b).

The majority (72 percent) of deer harvest by Metlakatla residents takes place in ten WAAs (Table 3.23-39). Metlakatla residents account for 1 percent (WAA 1315) to 100 percent (WAAs 0405 and 0406) of the rural harvest in these WAAs, and 1 percent (WAAs 1214 and 1315) to 15 percent (WAA 0405) of all harvest.. About 39 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

The WAAs used by Metlakatla residents occur in areas that have been affected to variable degrees by past timber harvest and, therefore, deer habitat capabilities are currently estimated at 56 to 100 percent of 1954 levels (Table 3.23-39). Two of the 10 WAAs (1107 and 1210) used most by Metlakatla residents would not be affected by any of the alternatives (Table 3.23-39). In the remaining eight WAAs, additional harvest would occur under all alternatives that would reduce habitat capabilities after 100 years by a further 1 to 7 percent (Table 3.23-39).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted in the Metlakatla community use area by Metlakatla residents, all rural hunters, and all hunters in both the short and long terms. Because proposed harvest is substantially less under all current alternatives than in the 1997 analysis, it is likely that all of the current alternatives would also provide sufficient habitat capability for deer hunted by Metlakatla residents, all rural hunters, and all hunters in this area over the course of Forest Plan implementation.

Table 3.23-39
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Metlakatla Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	**Metlakatla Residents**	**All Rural Hunters[2]**	**All Hunters**	**2014**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 5**
1107	8	99	130	99%	99%	99%	99%	99%	99%
1318	7	159	198	90%	83%	85%	85%	85%	85%
1422	6	247	383	57%	49%	52%	51%	51%	51%
0405	4	4	25	89%	86%	87%	87%	86%	87%
1214	3	120	235	77%	70%	72%	72%	72%	71%
1421	3	76	102	68%	62%	64%	63%	63%	63%
1315	3	201	317	56%	52%	52%	53%	53%	51%
1210	2	4	31	100%	100%	100%	100%	100%	100%
0406	2	2	55	76%	71%	73%	72%	71%	72%
0509	2	2	19	95%	93%	94%	94%	93%	93%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

Meyers Chuck

Affected Environment

Overview and Demographic Characteristics
Meyers Chuck is a small fishing village on the northwest tip of Cleveland Peninsula, 40 miles northwest of Ketchikan. According to the 2000 Census, Meyers Chuck had a 2000 population of 21, none of whom were Alaska Native (U.S. Census Bureau 2001). As noted earlier, effective June 1, 2008, Meyers Chuck was incorporated into the Wrangell City and Borough CA and its population is no longer separately counted or estimated by the federal or state government.

Beginning as a protected anchorage for fishing vessels, Meyers Chuck grew with the building of a cannery in Union Bay in 1916. Postal service began in 1922. Fishing and fish processing, and support services sustained the community until the mid-1900s. Fishing and fish processing are still the basic sources of income in the community.

Meyers Chuck's population was the same in 1990 as it was in 1970, but declined by 16 residents, or 43 percent, between 1990 and 2000. The population declined by a further 6 people or 29 percent between 2000 and 2005. Total estimated population was 11 in Meyers Chuck in 2006 (Alaska DOL 2007).

Year	1970	1980	1990	2000	2005	2006
Population	37	50	37	21	15	11

Source: USDA Forest Service 1997a; U.S. Census Bureau 2001; Alaska DOL 2007

Economic Conditions
The Meyers Chuck economy is primarily based on fishing with ten residents holding commercial fishing licensees in 2013, bringing in over $300,000 in estimated gross earnings (ACFEC 2015). Due to the relatively few cash opportunities, many residents depend on subsistence activities (Alaska DCED 2002).

Employment by industry data for Meyers Chuck were not available. The 2000 U.S. Census identified 3 people as employed in a potential workforce of 13 residents. While no adults in Meyers Chuck were identified as unemployed and seeking work in 2000, 77 percent of the population was identified as unemployed and not seeking work. Meyers Chuck has no central utility system and residents rely upon individual generators.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Meyers Chuck in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-40. This area contains 380,308 acres of NFS land (among other land ownerships). Table 3.23-40 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Meyers Chuck, ranging from about 0.4 percent (Alternative 1) to 1.4 percent (Alternative 3). Harvest activities could have localized effects if they coincide with a particular location favored by Meyers Chuck residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-40).

Figure 3.23-40
Meyers Chuck's Community Use Area

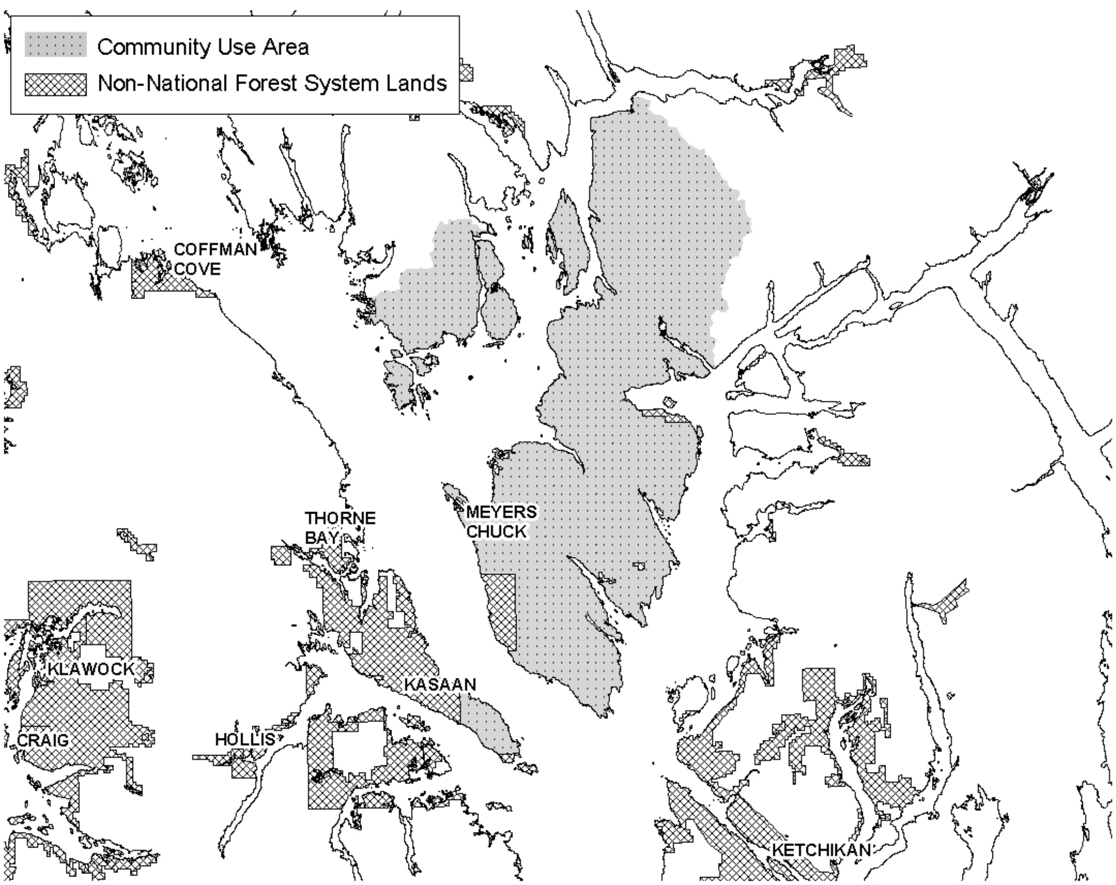


Table 3.23-40
Estimated Maximum Harvest (acres) over 100 Years in Meyers Chuck's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	1,073	3,177	3,370	1,478	1,518
Old Growth	366	221	1,993	287	239
Total	**1,439**	**3,398**	**5,363**	**1,765**	**1,756**
Harvest as a Percent of Total NFS Lands in the Community Use Area	0.4%	0.9%	1.4%	0.5%	0.5%

Economy
Meyers Chuck is primarily a fishing community and would be primarily influenced by changes in fishing. Commercial fishing is not likely to be affected under any of the alternatives.

Subsistence
No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 80 percent of the total edible pounds of subsistence resources harvested by Meyers Chuck households (Kruse and Frazier, 1988). Marine resources (fish and marine invertebrates) accounted for the majority (83 percent) of per capita subsistence harvest in Meyers Chuck in 1987 (ADF&G 2014).

The 1988 TRUCS study found that deer account for 5 percent of the total edible pounds of subsistence resources harvested by Meyers Chuck households (Kruse and Frazier, 1988). Deer accounted for 5 percent of per capita subsistence harvest by Meyers Chuck residents in 1987 (ADF&G 2014).

Data were not provided for Meyers Chuck in the ADF&G deer harvest reports for 2004 to 2013. The majority of deer harvest by Meyers Chuck residents likely takes place in GMU 1A and GMU 2. As of 2013, deer numbers were at very low levels throughout most of GMU 1A and were no longer meeting local hunter demands or established deer harvest objectives (Harper 2013). Though not closed, starting in 2011 the deer hunting season was shortened to August 1 through November 30 instead of continuing through December. Hunters are known to be shifting efforts to other more productive areas, such as nearby GMU 2, leading to less hunter effort and fewer deer harvested in GMU 1A (Harper 2013). Following a deer population decline from 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013).

In summary, use of most subsistence resources (fish and marine invertebrates) by Meyers Chuck residents is not expected to be affected under any of the alternatives. Given the small portion (0.4 to 1.4 percent) of the Meyers Chuck community use area that could be affected by timber harvest, subsistence use of deer is also not likely to be affected under any of the alternatives.

Naukati Bay

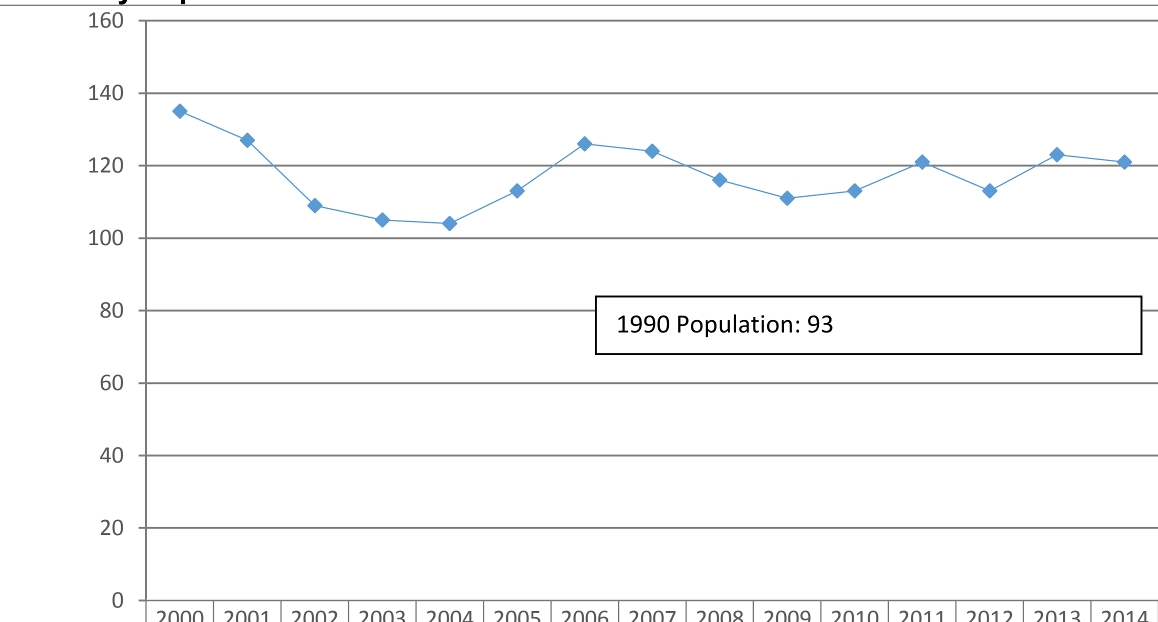
Affected Environment

Overview and Demographic Characteristics
Naukati Bay is located on the northwest coast of Prince of Wales Island. The area was named "Naukatee Nay" in 1904 after the local Native name for the

area. The community of Naukati Bay was initially developed as a logging camp, but was later settled as an Alaska Department of Natural Resources land disposal site (Alaska DCED 2006). Naukati Bay is now a Home Owners Association and a 501(c)(4) Corporation; in 2006, the community rejected a proposal to become a second-class city and remains an unincorporated community with a homeowners association (Naukati Bay 2015).

The population of Naukati Bay increased by 42 people or 45 percent between 1990 and 2000. The population has fluctuated since 2000 but overall remained fairly constant, with a total estimated population of 121 in 2014 (Figure 3.23-41). Alaska Natives comprised 6 percent of the population in Naukati Bay in 2010 (Table 3.23-8). A total of 19 students were enrolled in Naukati School in 2014, down from 36 students in 2000 (Table 3.23-9).

Figure 3.23-41
Naukati Bay Population 1990 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Naukati Bay	135	127	109	105	104	113	126	124	116	111	113	121	113	123	121

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions
The Naukati Bay economy is dependent on the timber industry and employment is largely seasonal. The Naukati Logging camp provides log transfer services for several smaller camps on Prince of Wales Island. With help from the State and Forest Service, Naukati Bay built an oyster nursery raising oyster seed and sells the larger oysters to the grow out farms regionally and around Alaska (Naukati Bay 2015). Two residents held commercial fishing permits in 2013 (ACFEC 2015). Local businesses also include a cabin rental business and one sport fish charter operation (Dugan et al. 2009). A new marina and boat ramp was completed in 2014 (Naukati Bay 2015).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. While no one was estimated to be unemployed and seeking work in 2013, an estimated 20 percent of the population was not in the labor force, which includes seasonal workers interviewed during the off season who were not looking for work (U.S. Census Bureau 2014b). Median household income was $45,750, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	6	13
Construction	12	26
Manufacturing	1	2
Trade, Transportation and Utilities	1	2
Information	1	2
Financial Activities	0	0
Professional and Business Services	0	0
Educational and Health Services	12	26
Leisure and Hospitality	2	4
State Government	1	2
Local Government	10	21
Other	1	2
Unknown	0	0
Total Employment	**47**	**100**

Source: Alaska DOL 2015d

Naukati Bay has some of the highest electric rates in Alaska due to the use of diesel-generated power. Residential rates for 2011 before and after the application of PCE payments were 55 cents/kWh and 18 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 55 cents/kWh. In June of 2013, residential rates before and after PCE payments had reached 58 cents/kWh and 36 cents/kWh, respectively (AEDG 2015a). The high cost of energy currently impedes economic development for commercial and industrial ventures (Alexander et al. 2010).

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Naukati Bay in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-42. This area contains 1,109,349 acres of NFS land (among other land ownerships). Table 3.23-41 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. Total areas available for harvest range from about 9.0 percent of the Naukati Bay community use area under Alternative 1 to 11.8 percent under Alternative 2. Harvest activities could have localized effects if they coincide with a particular location favored by Naukati Bay residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-41).

Economy

Naukati Bay is primarily a logging community and as such would be directly affected by the amount of logging opportunities on north Prince of Wales Island. Potential impacts to the timber industry are discussed in the *Regional and National Economy* section, above.

Figure 3.23-42
Naukati Bay's Community Use Area

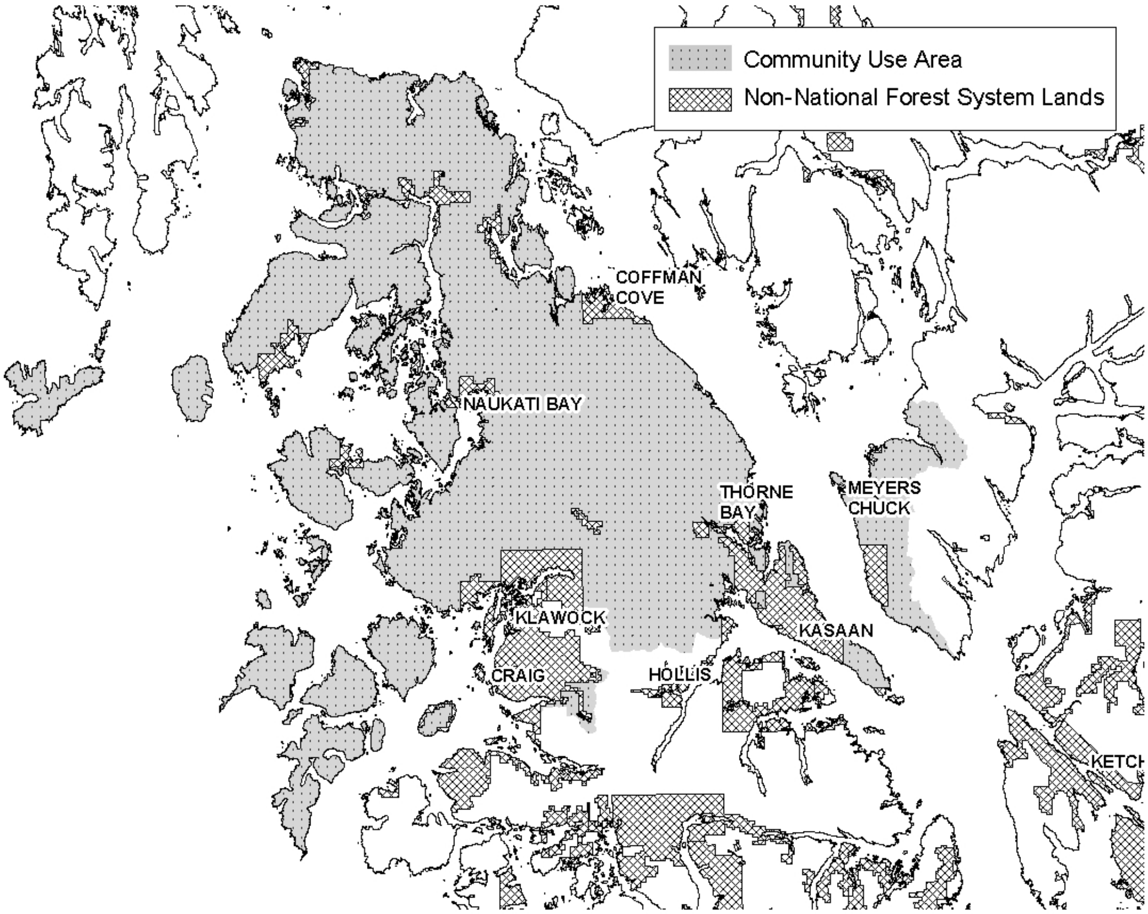


Table 3.23-41
Estimated Maximum Harvest (acres) over 100 Years in Naukati Bay's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	84,887	123,784	121,301	95,725	99,655
Old Growth	15,273	6,927	7,279	11,348	9,438
Total	**100,159**	**130,711**	**128,580**	**107,073**	**109,093**
Harvest as a Percent of Total NFS Lands in the Community Use Area	9.0%	11.8%	11.6%	9.7%	9.8%

Subsistence

Naukati Bay was not surveyed by the Tongass Resource Use Cooperative Survey, and there are no baseline subsistence data for this community. No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. Marine resources (fish and marine invertebrates) accounted for 73 percent of per capita subsistence harvest in Naukati Bay in 1998 (ADF&G 2014). Deer accounted for 19 percent of per capita subsistence harvest by Naukati Bay residents in 1988 (ADF&G 2014).

Naukati Bay residents harvest deer almost entirely on Prince of Wales Island, which is included in GMU 2. Following a deer population decline from 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Naukati Bay residents, total annual deer harvest in 2013 was more than double the 2004 harvest level (34 more deer) (ADF&G 2015b).

Residents of Naukati Bay harvest the majority (73 percent) of their deer from three WAAs on north Prince of Wales Island (1422, 1529, and 1531). As shown in Table 3.23-42, the Naukati Bay portion ranges from 2 percent to 21 percent of the total harvest and from 4 percent to 37 percent of the rural hunter harvest in these WAAs. About 40 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

Table 3.23-42
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Naukati Bay Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Naukati Bay Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1422	30	247	383	57%	49%	52%	51%	51%	51%
1531	8	22	39	64%	65%	66%	65%	64%	63%
1529	3	77	154	68%	65%	69%	69%	65%	65%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

The three WAAs heavily used by Naukati Bay residents occur in an area with substantial past harvest and, therefore, deer habitat capabilities are currently estimated to be considerably below 1954 levels (Table 3.23-42). Under each of the alternatives, additional harvest would occur that would reduce habitat capabilities after 100 years by a further 1 to 8 percent (Table 3.23-42).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted in the Naukati Bay community use area by Naukati residents, all rural hunters, and all hunters in the short term, as well as for Naukati Bay residents in the long term. All of the 1997 alternatives included higher levels of timber harvest in Naukati Bay's community use area than the alternatives considered in this EIS (34 to 247 percent higher). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the short and long terms for Naukati residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to support deer populations sufficient to avoid effects on hunter success for all rural hunters and all hunters in the long term. This may still be the case under all current alternatives.

In summary, use of most subsistence resources by Naukati Bay residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Naukati Bay's subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Pelican

Affected Environment

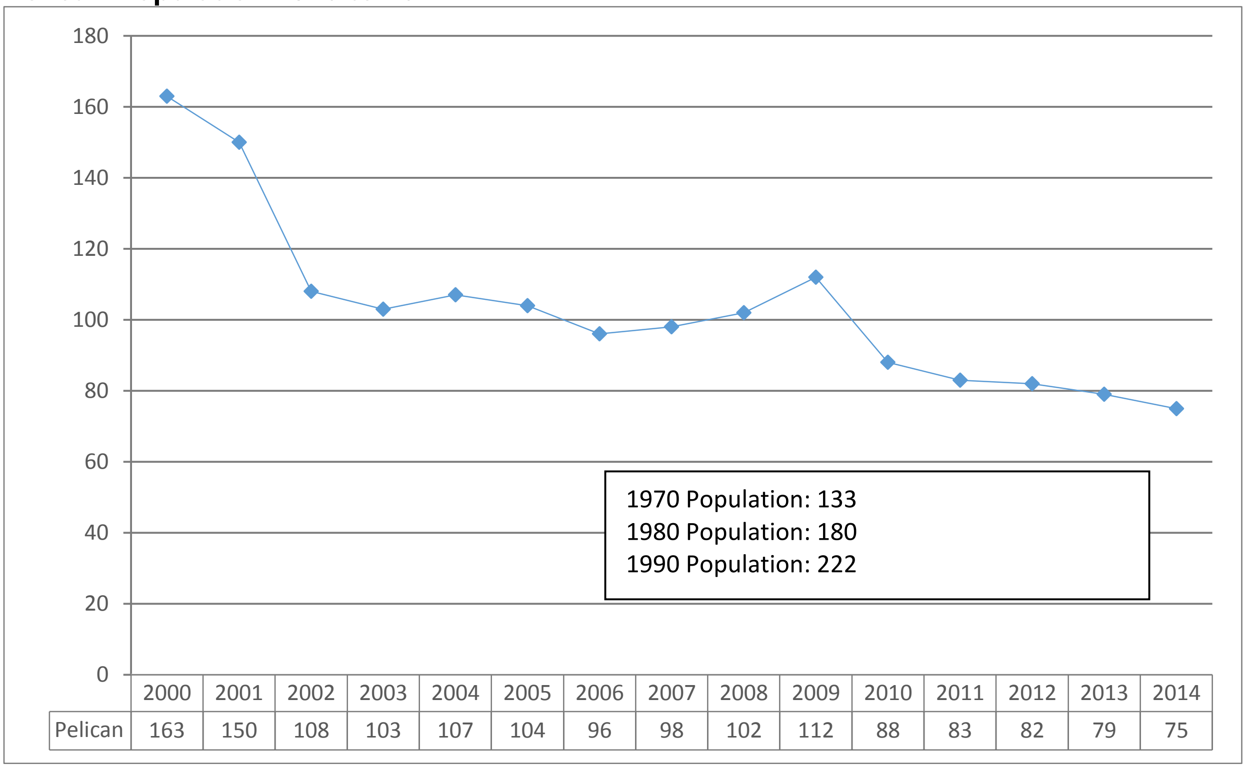
Overview and Demographic Characteristics

Pelican is a fishing village along Lisianski Inlet on the northwest corner of Chichagof Island, located approximately 70 air miles north of Sitka and 70 air miles west of Juneau. Part of the community is built on pilings over tideland. A boardwalk serves as the town's main thoroughfare due to lack of flat land for roads. Prior to its settlement in 1938, the Pelican area was used as a safe harbor by fishermen and as a hunting, fishing, trapping, and gathering site by Hoonah Tlingit groups, who claimed lands on either side of Cross Sound (ADF&G 1994).

Pelican was incorporated in 1943 and is a first-class city with a Strong Mayor form of government. The government includes a seven-person city council including the mayor, a five-person advisory school board, a five-person planning and zoning commission, and a number of municipal employees. The community also has an active local Fish and Game Advisory Committee (ADF&G 2015a). The Native community, largely Tlingit, is represented by a local Tlingit and Haida Community Council. No Native land allotments or withdrawals occur in the immediate vicinity of Pelican. Pelican is accessible via the Alaska Marine Highway System, as well as floatplane from Juneau or Sitka (ADF&G 1994).

The population of Pelican grew by 67 percent between 1970 and 1990, increasing from 133 to 222 residents over this period. The population of Pelican decreased by 59 residents (27 percent) from 1990 to 2000, and has continued to trend downward since 2000, with a total estimated population of 75 residents in 2014 (Figure 3.23-43). Alaska Natives comprised 34 percent of the population in 2010 (Table 3.23-8). School enrollment has also declined since 1990, dropping from 51 students in 1990 to 13 students in 2014 (Table 3.23-9).

Figure 3.23-43
Pelican Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Pelican	163	150	108	103	107	104	96	98	102	112	88	83	82	79	75

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The Pelican economy is primarily based on commercial fishing, sport fishing, and tourism. In 2013, 30 residents held commercial fishing permits and brought in estimated gross earnings of just over $1 million (ACFEC 2015). Salmon, halibut, and sablefish are the most important local fisheries. Pelican Seafoods, a fish processing plant that was formerly the largest employer, went through a series of ownership changes and ultimately closed after forecolosure on the last owner in 2010 (Himes-Cornell et al. 2013).

There have been low levels of tourism in Pelican for some time but more recently has begun to play a more important role in the local economy (Dugan et al. 2009). Tourism in Pelican is primarily focused on sport fishing and marine wildlife viewing charters, with 12 marine charters operating out of the town in 2005. The town also serves as a jumping-off point for independent travelers accessing nearby wilderness (Dugan et al. 2009).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. An estimated 31 percent of the labor force in Pelican was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $89,167, compared to the state median of $70,760; the corresponding median for the Hoonah-Angoon CA was $49,545 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	0	0
Construction	0	0
Manufacturing	1	3
Trade, Transportation and Utilities	2	7
Information	0	0
Financial Activities	0	0
Professional and Business Services	0	0
Educational and Health Services	1	3
Leisure and Hospitality	0	0
State Government	4	14
Local Government	21	72
Other	0	0
Unknown	0	0
Total Employment	**29**	**100**
Source: Alaska DOL 2015d		

The City of Pelican runs its own 0.7MW run-of-river hydroelectric project that serves the community (Table 3.12b-2). The facility failed during a major flood event in 2009, causing the project to be completely renovated and upgraded over several years. The Pelican Hydroelectric project became operational again in March 2013. The residential rates for 2011 are during the period when the Pelican hydroelectric project power was unavailable and rates increased. At that time, residential rates before and after the application of PCE payments were 69 cents/kWh and 31 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 69 cents/kWh. As of June 2013, residential rates before and after PCE payments were 61 cents/kWh and 47 cents/kWh, respectively (AEDG 2015b).

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Pelican in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-44. This area contains 488,851 acres of NFS land (among other land ownerships). As shown in Table 3.23-43, no young-growth or old-growth harvest is projected to take place in the community use area for Pelican over the next 100 years under any alternative; therefore, no timber-harvest-related effects to this area are expected.

Figure 3.23-44
Pelican's Community Use Area

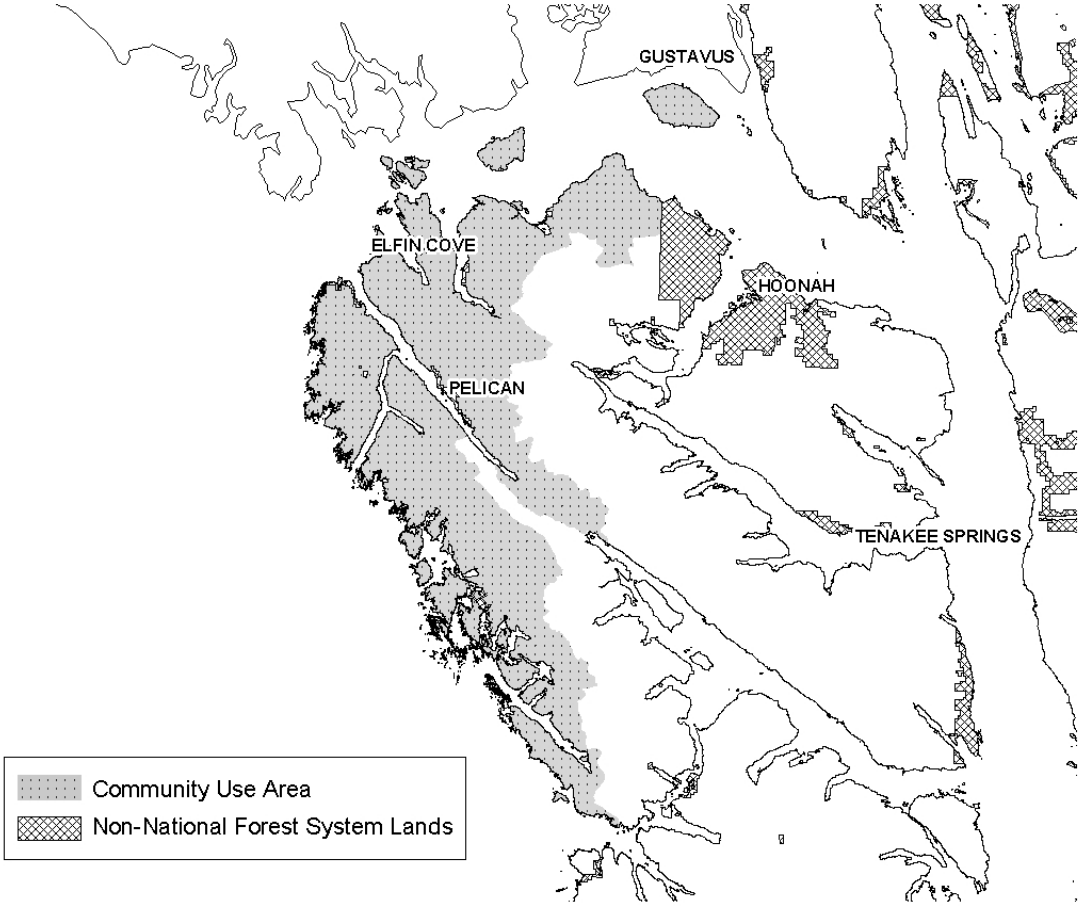


Table 3.23-43
Estimated Maximum Harvest (acres) over 100 Years in Pelican's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	0	0	0	0	0
Old Growth	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
Harvest as a Percent of Total NFS Lands in the Community Use Area	0.0%	0.0%	0.0%	0.0%	0.0%

Economy
The Pelican economy is primarily based on commercial fishing, sport fishing, and tourism. None of the alternatives are expected to affect these activities.

Subsistence

In terms of subsistence use, Lisianski Inlet, Icy Strait, northwest Chichagof, and Yakobi Island are the most important areas to Pelican. These areas are presently legislatively withdrawn from timber harvest as either Wilderness or LUD II or allocated to the Mostly Natural LUDs. Therefore, it is unlikely that subsistence use in Pelican would be directly affected under any of the alternatives.

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 63 percent of the total edible pounds of subsistence resources harvested by Pelican households (Kruse and Frazier, 1988). Marine resources (fish and marine invertebrates) accounted for 64 percent of per capita subsistence harvest in Pelican in 1987 (ADF&G 2014).

The 1988 TRUCS study found that deer account for 30 percent of the total edible pounds of subsistence resources harvested by Pelican households (Kruse and Frazier, 1988). Deer accounted for 30 percent of per capita subsistence harvest by Pelican residents in 1987 (ADF&G 2014).

The WAAs used by Pelican residents for hunting deer lie within GMU 4. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). However, deer harvest by Pelican residents has generally declined over the past decade, with about 61 percent lower total annual harvest (or 47 fewer deer) in 2013 than in 2004 (ADF&G 2015b).

Pelican residents take the majority (94 percent) of their deer from three WAAs on northwestern Chichagof Island (3417, 3418, and 3419). As shown in Table 3.23-44, these WAAs and, therefore, subsistence deer harvest would not be affected by any of the alternatives.

Table 3.23-44
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Pelican Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Pelican Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
3419	20	23	40	100%	100%	100%	100%	100%	100%
3418	13	18	26	100%	100%	100%	100%	100%	100%
3417	6	60	115	100%	100%	100%	100%	100%	100%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

Petersburg and Kupreanof

Affected Environment

Overview and Demographic Characteristics

Petersburg

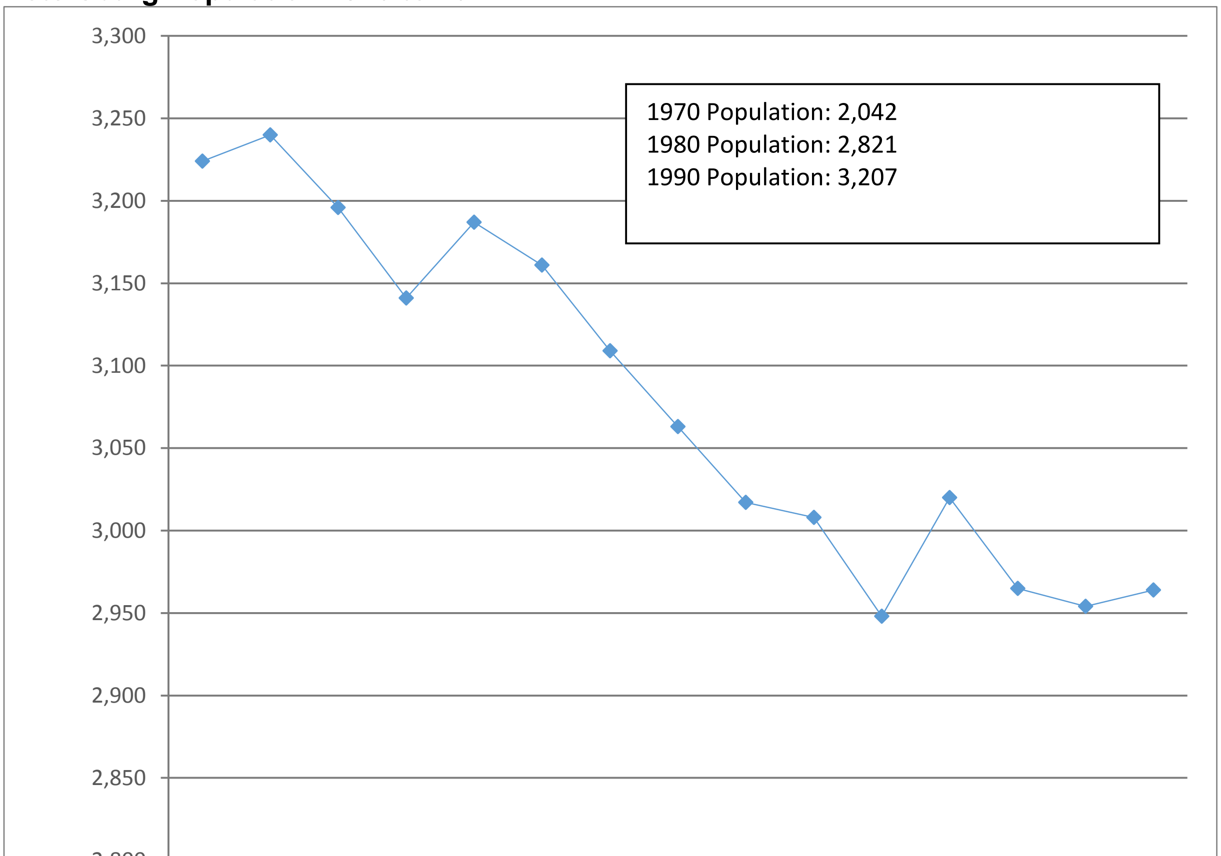
Petersburg is located on the northwest end of Mitkof Island, where the Wrangell Narrows meet Frederick Sound. Formerly the City of Petersburg, the community of Petersburg is now part of the larger Petersburg Borough, which includes the former city and the rest of Mitkof Island, part of Kupreanof Island, and the mainland coastline north to Endicott Arm. The City of Petersburg was dissolved in January 2013 and became part of the new home-rule Petersburg Borough at this time.

Tlingit Indians from Kake historically used the north end of Mitkof Island as a summer fish camp, with some reportedly living year-round at the site. Petersburg was named after Norwegian immigrant Peter Buschmann, who arrived in the late 1890s. By 1900, he had built the Icy Strait Packing Company cannery, a sawmill, and a dock. The City incorporated in 1910, and by 1920, 600 people lived in Petersburg year-round. Alaska's first shrimp processor, Alaska Glacier Seafoods, was founded in Petersburg in 1916, and a cold storage plant was built in 1926.

Today, Petersburg is one of Alaska's major fishing communities. Petersburg has one of the largest home-based halibut fleets in Alaska, and is also well-known for shrimp, crab, salmon, herring, and other fish products. Subsistence remains an important part of the local way of life. The community maintains a mixture of Tlingit and Scandinavian history and is known as "Little Norway." Petersburg has a local Fish and Game Advisory Committee, which takes an active interest in resource management issues, meeting three to four times a year (ADF&G 2015a).

The population of Petersburg grew by 57 percent between 1970 and 1990, with the number of residents increasing from 2,042 to 3,207 (Figure 3.23-45). The population remained more or less constant between 1990 and 2000, increasing by less than 1 percent over this period. Petersburg had a total estimated population of 2,964 in 2014, approximately 260 or 8 percent fewer residents than 14 years earlier in 2000. Alaska Natives comprised 7 percent of the population in 2010 (Table 3.23-8). School enrollment has also declined since 2000, decreasing at a faster rate than the population, with a total of 436 students enrolled in 2014 versus 678 students in 2000 (Table 3.23-9).

Figure 3.23-45
Petersburg Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Petersburg	3,224	3,240	3,196	3,141	3,187	3,161	3,109	3,063	3,017	3,008	2,948	3,020	2,965	2,954	2,964

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Kupreanof

The City of Kupreanof is located across the Wrangell Narrows from Petersburg, on the northeast shore of Kupreanof Island. Originally known as West Petersburg, the town was homesteaded around the turn of the century. In 1911, the Knudsen brothers established the first business in town, a small sawmill that produced barrels for salted fish. The Yukon Fur Farm was established in the early 1920s. The farm initially raised foxes, but soon shifted to mink and became the first mink farm in Alaska. During the 1920s, more than 100 people resided in West Petersburg, with residents operating a small store and a gaff hook factory. Businesses in the 1930s and 1940s included a small ship repair facility, an outboard motor shop, commercial logging, and a clam cannery.

Although the Knudsen Mill and Yukon Fur Farm continued to operate until the 1960s, the population fell during the 1950s, dropping from 60 in 1950 to 26 in 1960. The population has since remained stable. The community changed its name to Kupreanof when it incorporated as a second class city in 1975.

Kupreanof is a small, closely knit, non-Native community. All of the homes are built on the waterfront; there are no roads. Residents use skiffs to travel to Petersburg for schooling, goods and services. The majority of Kupreanof's working residents are self-employed although some commute by boat to jobs in

Petersburg. Subsistence and recreation uses of resources around Kupreanof supplement household incomes; deer, salmon, halibut, shrimp and crab are favorites. Although located within the boundary for the recently formed Petersburg Borough, the City of Kupreanof continues to exist as a separate municipality. The City has no full-time staff, few services, and no public utilities.

Kupreanof had a total estimated population of 25 in 2014. Population in the community has remained constant for more than two decades with some minor fluctuations. Total estimated population was 23 in 1990 and 2000 (Alaska DOL 1999, 2010a, 2015b).

Economic Conditions

The Petersburg economy is primarily based on the commercial fishing industry (443 residents had commercial fishing permits in 2013). Estimated gross fishing revenues of local residents was approximately $68 million in 2013 (ACFEC 2015). Petersburg is among the top-ranked ports in the United States for quality and value of fish landed. The city includes several processors operating cold storage, canneries, and custom packing services and the state-run Crystal Lake salmon hatchery. Petersburg also has two small active saw mills, and provides supplies and services for many of the area logging camps (Himes-Cornell et al. 2013).

While there is no deep water dock suitable for cruise ships, some small-ship cruise lines stop in Petersburg and local charter boats and fishing lodges draw tourism visitation (Himes-Cornell et al. 2013). In the summer of 2007, about 13,000 people visited Petersburg for nature-based tourism (mainly fishing lodges and charters) generating over $2.7 million in revenue (Dugan et al. 2009).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. An estimated 4 percent of the labor force in Petersburg was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $66,125, compared to the state median of $70,760; the corresponding median for the Petersburg Borough was $63,934 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	26	2
Construction	69	6
Manufacturing	155	14
Trade, Transportation and Utilities	229	20
Information	18	2
Financial Activities	24	2
Professional and Business Services	34	3
Educational and Health Services	165	14
Leisure and Hospitality	77	7
State Government	67	6
Local Government	253	22
Other	30	3
Unknown	26	2
Total Employment	**1,147**	**100**

Source: Alaska DOL 2015d

Petersburg is served by the SEAPA system that connects Ketchikan, Petersburg, and Wrangell. The Swan Lake and Tyee Lake hydroelectric projects provide electricity to this SEAPA network (Table 3.12b-2). Residential rates for 2011 before and after the application of PCE payments were both 10 cents/kWh (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 12 cents/kWh and 11 cents/kWh, respectively. Three SEAPA hydroelectric projects would help support reliability on the Swan-Tyee Intertie, including Whitman Lake, Swan Lake Expansion, and Mahoney Lake (Table 3.12b-3). Petersburg has been involved in a regional effort to connect hydroelectric systems to sell power and help smaller communities replace their dieslel systems (Alexander et al. 2010).

Kupreanof has no central utility system, and residents rely upon individual generators.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Petersburg in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-46. This area contains 742,197 acres of NFS land (among other land ownerships). Table 3.23-45 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Petersburg, ranging from about 2.9 percent (Alternatives 1 and 4) to 3.7 percent (Alternatives 2 and 3). Harvest activities could have localized effects if they coincide with a particular location favored by Petersburg residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-45).

Figure 3.23-46
Petersburg's Community Use Area

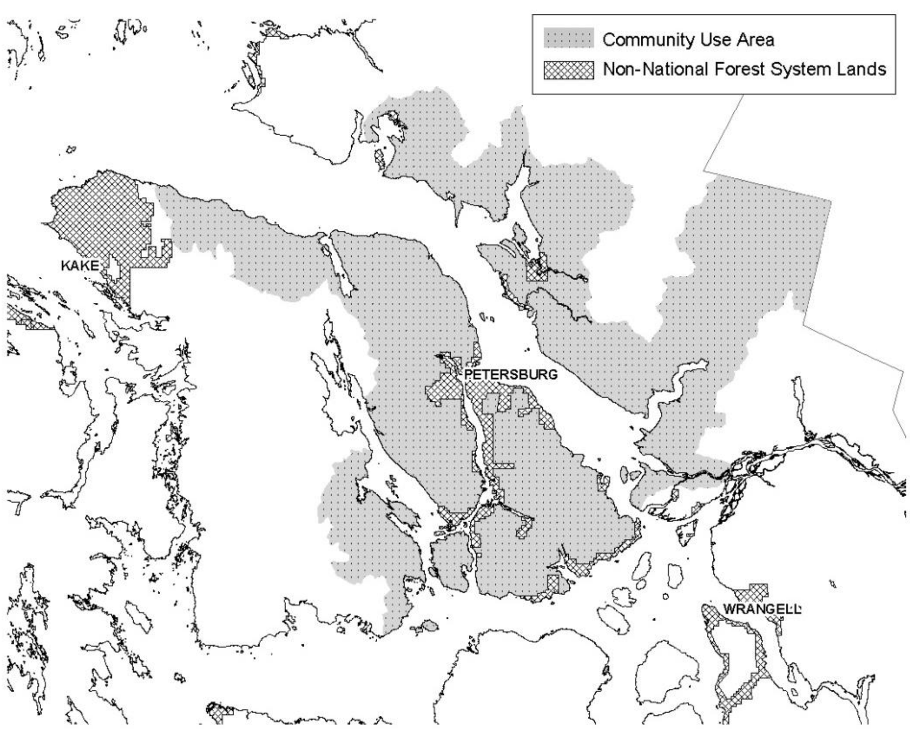


Table 3.23-45
Estimated Maximum Harvest (acres) over 100 Years in Petersburg's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	15,743	24,433	23,835	17,180	18,759
Old Growth	5,976	3,135	3,638	4,611	4,133
Total	**21,718**	**27,568**	**27,473**	**21,791**	**22,891**
Harvest as a Percent of Total NFS Lands in the Community Use Area	2.9%	3.7%	3.7%	2.9%	3.1%

Economy
Commercial fishing is particularly important to Petersburg. Commercial fisheries employment is not likely to be affected under any of the alternatives.

Subsistence
No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 52 percent of the total edible pounds of subsistence resources harvested by Petersburg households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 86 percent of per capita subsistence harvest in Petersburg in 2000 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 21 percent of the total edible pounds of subsistence resources harvested by Petersburg households (Kruse and Frazier 1988). Land mammals (mostly deer) accounted for 11 percent of per capita subsistence harvest by Petersburg residents in 1987 (ADF&G 2014).

Petersburg residents harvest deer on and around Mitkof and Kupreanof Islands, with the majority of harvest occurring within GMUs 3 and 4. The deer populations within GMU 3 have historically fluctuated with high and low extremes. Between 1994 and 2011, deer harvest ranged from a low of 333 to a high of 1,119 (Harper 2013). As of 2013, the harvest level was about 100 deer below the previous 10-year mean (Harper 2013). GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). Among Petersburg residents, total annual deer harvest appears to have followed a corresponding pattern, dipping after 2006 and then gradually increasing. In 2013, total annual harvest by Petersburg residents was still 32 percent less (209 fewer deer) than in 2004 (ADF&G 2015b).

Seventeen WAAs account for the majority (74 percent) of deer harvest by Petersburg residents. As shown in Table 3.23-46, the Petersburg portion ranges from 2 to 100 percent of all hunters and 4 to 100 percent of all rural hunters in these WAAs, and represents the majority or all of rural hunter deer harvest in 12 of the 17 WAAs. About 30 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a limited harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

In 8 of the 17 WAAs, there would be no effect to deer habitat capability under all alternatives (Table 3.23-46). In the remaining 9 WAAs, all of which currently have deer habitat capability below 1954 levels due to prior timber harvest, deer habitat capability would be further reduced by 1 to 10 percent (Table 3.23-46).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted by Petersburg residents, all rural hunters, and all hunters in the short term, as well as for Petersburg residents in the long term. All of the 1997 alternatives included substantially higher levels of timber harvest in Petersburg's community use area than the alternatives considered in this EIS (approximately 122 to 516 percent higher). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the short and long terms for deer hunted by Petersburg residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to produce deer populations sufficient to avoid effects on hunter success for all rural hunters under the two most timber intensive alternatives and for all hunters under all alternatives in the long term. This may still be the case under all current alternatives.

Table 3.23-46
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Petersburg Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Petersburg Residents	All Rural Hunters[2]	All Hunters	2104	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
5138	56	56	61	80%	74%	77%	75%	74%	74%
2007	43	44	46	75%	72%	73%	73%	73%	73%
3939	42	71	105	**100%**	100%	100%	100%	100%	100%
3938	30	41	75	**100%**	100%	100%	100%	100%	100%
3940	30	61	75	**93%**	93%	93%	93%	93%	93%
1605	24	24	27	77%	77%	76%	78%	77%	77%
1603	18	21	25	**94%**	94%	94%	94%	94%	94%
1528	18	30	36	78%	77%	78%	78%	78%	78%
1905	16	190	204	73%	67%	70%	69%	67%	67%
1706	14	14	15	**100%**	100%	100%	100%	100%	100%
1530	12	57	124	61%	58%	61%	59%	58%	57%
1529	10	77	154	68%	65%	69%	69%	65%	65%
5134	9	10	13	**89%**	90%	90%	90%	90%	90%
5136	9	9	9	84%	74%	81%	81%	76%	77%
1420	7	158	276	49%	45%	46%	46%	46%	45%
5137	7	7	7	**100%**	100%	100%	100%	100%	100%
5133	6	6	6	**98%**	98%	98%	98%	98%	98%

1 Calculated based on harvest where location is known.
2 The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

In summary, use of most subsistence resources by Petersburg residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer in some of the WAAs hunted by Petersburg residents may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Petersburg's subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Point Baker

Affected Environment

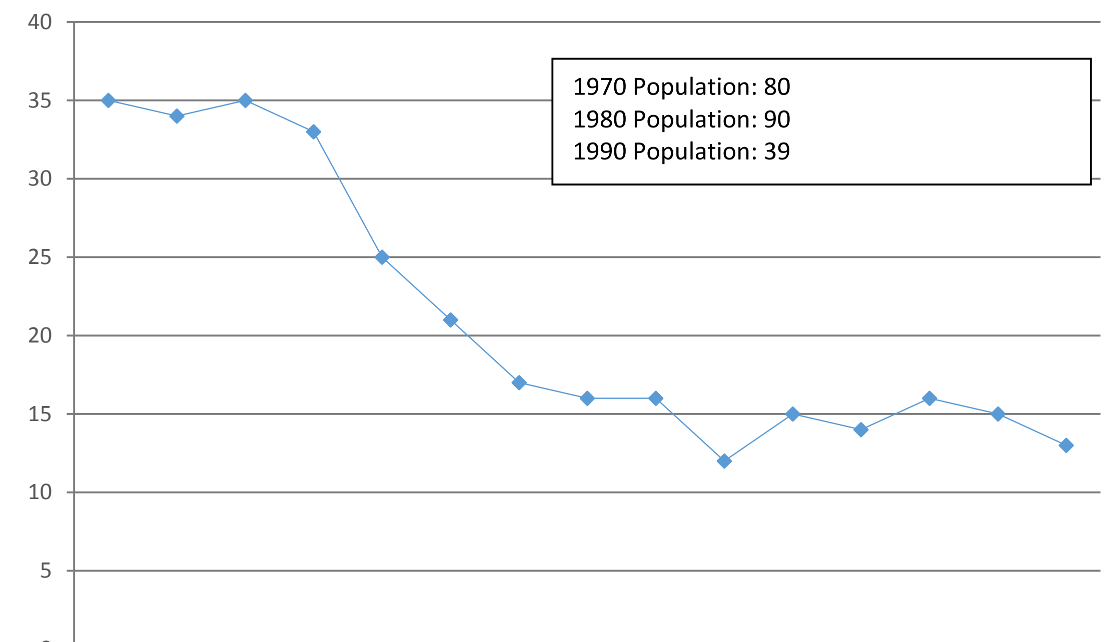
Overview and Demographic Characteristics

Point Baker is located on the northern tip of Prince of Wales Island, 101 air miles northwest of Ketchikan. Point Baker received its name in 1793 from Captain George Vancouver. Native settlement of the area was already established during Vancouver's time. Tlingits used fish camps at Point Baker to participate in both customary trade and subsistence fishing. Commercial fishing at Point Baker began in the early 1900s, when the area was used as the site of a floating fish packer. Land sales in Point Baker accounted for part of an increase in year-round residents, the majority being non-Native (ADF&G 1994).

Point Baker is accessible by floatplane and skiff. The community of Point Baker is not incorporated or located within any other local government jurisdiction. Point Baker is part of the Prince of Wales-Hyder CA.

The population of Point Baker decreased between 1970 and 1990, dropping by 50 percent from 80 people in 1970 to 39 people in 1990. Population in Point Baker has trended downward since 2000, falling from 35 residents in 2000 to 13 residents in 2014 (Figure 3.23-47). According to the 2010 Census, there were no Alaska Native residents in Point Baker. Point Baker is served by the school in Port Protection.

Figure 3.23-47
Point Baker Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Point Baker	35	34	35	33	25	21	17	16	16	12	15	14	16	15	13

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The Point Baker economy is heavily dependent on the fishing industry, with the entire adult population holding commercial fishing permits (ACFEC 2015). In 2013, local residents grossed an estimated $611,000 from salmon and halibut fishing (ACFEC 2015). Residents also participate in subsistence and recreational harvest of deer, salmon, halibut, shrimp, and crab (Himes-Cornell et al. 2013).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. While no adults in Point Baker were identified as unemployed and seeking work in 2013, an estimated 68 percent of the population was not employed and not seeking work (U.S. Census Bureau 2014b). Median household income was $18,906, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Point Baker has no central utility system and residents rely upon individual generators.

Employment by Industry (2012)	Number	Percent of Total
Natural Resources and Mining	0	0
Construction	0	0
Manufacturing	1	17
Trade, Transportation and Utilities	1	17
Information	0	0
Financial Activities	0	0
Professional and Business Services	0	0
Educational and Health Services	1	17
Leisure and Hospitality	0	0
State Government	0	0
Local Government	1	17
Other	2	33
Unknown	0	0
Total Employment	**6**	**100**

Source: Alaska DOL 2015d

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Point Baker in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-48. This area contains 842,636 acres of NFS land (among other land ownerships). Table 3.23-47 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. Total areas available for harvest range from about 7.7 percent of the Point Baker community use area under Alternative 1 to 10.2 percent under Alternatives 2 and 3. Harvest activities could have localized effects if they coincide with a particular location favored by Point Baker residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-47).

Economy

Commercial fisheries and subsistence use are important to Point Baker. Commercial fisheries employment is not expected to be affected under any of the alternatives.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 59 percent of the total edible pounds of subsistence resources harvested by Point Baker households (Kruse and Frazier, 1988). Marine resources (fish and marine invertebrates) accounted for 79 percent of per capita subsistence harvest in Point Baker in 1996 (ADF&G 2014).

The 1988 TRUCS study found that deer account for 27 percent of the total edible pounds of subsistence resources harvested by Point Baker households (Kruse and Frazier 1988). Deer accounted for 16 percent of per capita subsistence harvest by Point Baker residents in 1996 (ADF&G 2014).

Point Baker residents harvest deer on north Prince of Wales Island and Kupreanof Island, which are included in GMUs 2 and 3, respectively. In GMU 2, following a deer population decline 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). The deer populations within GMU 3 have historically fluctuated with high and low extremes. Between 1994 and 2011, deer harvest ranged from a low of 333 to a high of 1,119 (Harper 2013). As of 2013, the harvest level was about 100 deer below the previous 10-year mean (Harper 2013). Among Point Baker residents, data was not available for the 2011 to 2013 hunting seasons; however, data from 2004 to 2010 indicates generally low levels of harvest, and in 2010 total annual harvest was about 40 percent higher (4 more deer) than in 2004 (ADF&G 2015b).

Figure 3.23-48
Point Baker's Community Use Area

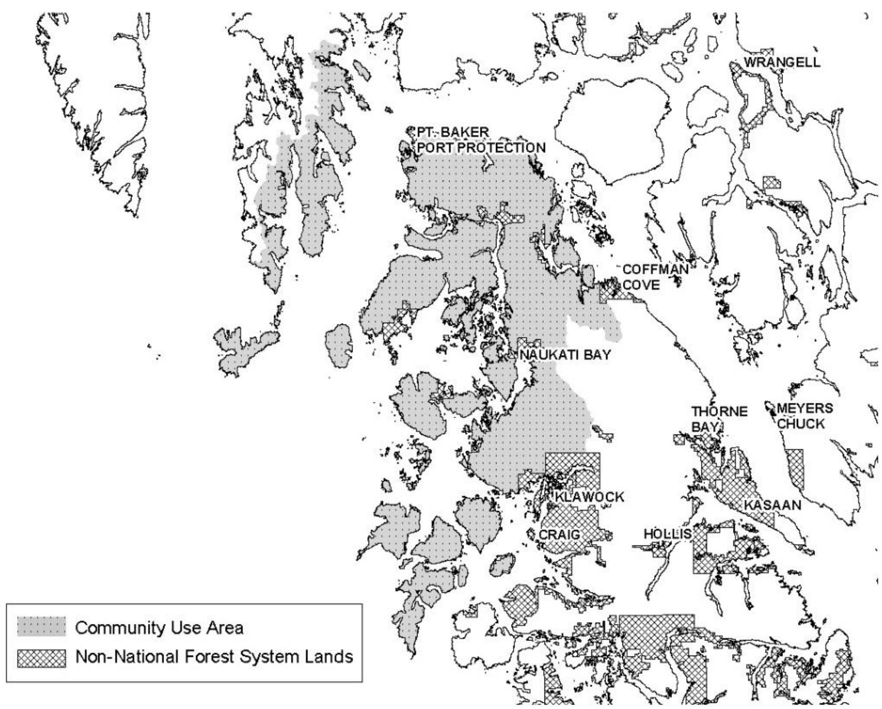


Table 3.23-47
Estimated Maximum Harvest (acres) over 100 Years in Point Baker's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	54,308	81,552	80,498	63,199	64,281
Old Growth	10,445	4,732	5,058	7,326	6,093
Total	**64,753**	**86,284**	**85,555**	**70,525**	**70,373**
Harvest as a Percent of Total NFS Lands in the Community Use Area	7.7%	10.2%	10.2%	8.4%	8.4%

Residents of Point Baker harvest the majority (69 percent) of their deer from two WAAs, 1529 and 1529. As shown in Table 3.23-48, the Point Baker portion is about 6 percent of the total combined harvest and 12 percent of the rural hunter harvest in these WAAs. About 48 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

Both WAAs used most by Point Baker residents occur in an area with substantial past timber harvest and, therefore, deer habitat capabilities are currently estimated to be below 1954 levels (Table 3.23-48). Under each of the alternatives, additional harvest would occur that would reduce habitat capabilities after 100 years by a further 1 to 4 percent (Table 3.23-48).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted by Point Baker residents and all rural hunters in the short term and long term. All of the 1997 alternatives included substantially higher levels of timber harvest in Point Baker's community use area than the alternatives considered in this EIS (approximately 41 to 288 percent higher). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the long term for deer hunted by Point Baker residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to produce deer populations sufficient to avoid effects on hunter success for all hunters in the long term. This may still be the case under all current alternatives.

In summary, use of most subsistence resources by Point Baker residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer on Prince of Wales Island may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Point Baker's subsistence use areas on Prince of Wales Island could also occur under all alternatives if of hunters from other communities were displaced due to timber harvest activity.

Table 3.23-48
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Point Baker Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013[2]			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Point Baker Residents	All Rural Hunters[3]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1529	10	77	154	68%	65%	69%	69%	65%	65%
1527	1	17	27	72%	68%	71%	71%	69%	69%

[1] Calculated based on harvest where location is known.
[2] Data from 2011-2013 not available for Point Baker residents.
[3] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

Port Alexander

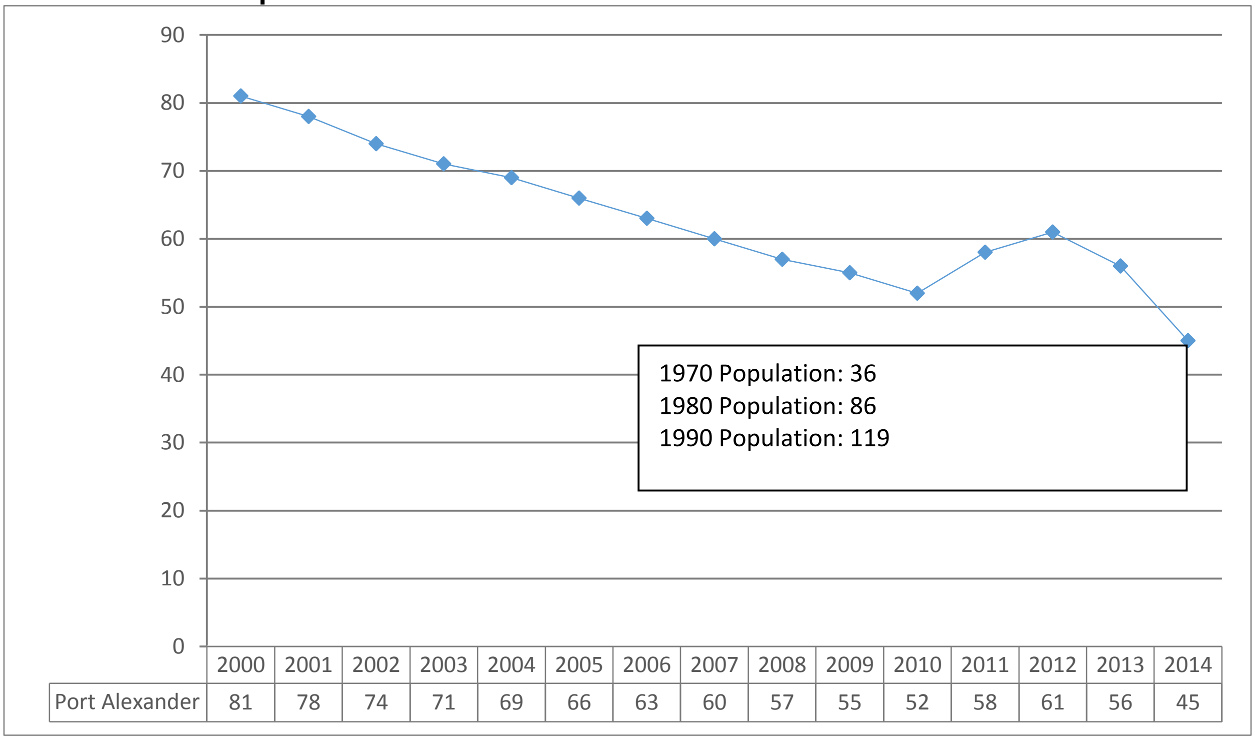
Affected Environment

Overview and Demographic Characteristics
Port Alexander is located on the southern tip of Baranof Island about 85 miles south of Sitka. Port Alexander was named in 1849 by the governor of the Russian American colonies. In 1913, salmon trollers discovered the rich fishing grounds in the area, and two floating processors arrived soon after. By 1916, there was a fishing supply store, a shore station, and a bakery at Port Alexander. During the 1920s and 1930s, a prosperous fishing fleet evolved, and houses, stores, restaurants, and a school were constructed. The 1940s and 1950s saw a steep decline in Port Alexander's population.

Today, people choose Port Alexander as a home because of its independent, subsistence lifestyle, and commercial fishing opportunities, as well as its remote setting. There are no roads in Port Alexander; travel within the community is by skiff, boardwalks, and footpaths (ADF&G 1994). The community has a local Fish and Game Advisory Committee; however, the last meeting was held in 2008 and it is currently considered inactive (ADF&G 2015a). .

Port Alexander's population more than tripled between 1970 and 1990, increasing from 36 in 1970 to 119 in 1990 (Figure 3.23-49). Population in Port Alexander has trended downward since 2000, dropping by 44 percent from 81 people in 2000 to 45 people in 2014. Alaska Natives comprised 4 percent of the population in Port Alexander in 2010 (Table 3.23-8). A total of 10 students were enrolled in Port Alexander School in 2014, down from 18 students in 2000 (Table 3.23-9).

Figure 3.23-49
Port Alexander Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The economy of Port Alexander is largely based on commercial fishing and subsistence use of marine and forest resources. In 2013, 17 residents, about 30 percent of the population that year, held commercial fishing permits (ACFEC 2015). Subsistence food sources include deer, salmon, halibut, shrimp, and crab (Himes-Cornell et al. 2013). The City, the Armstrong Keta salmon hatchery (several miles to the north), a private construction company, a private lodge, the school, and post office provide employment in the area (Himes-Cornell et al. 2013).

This is a small, remote community of approximately 60 summer residents and 30-40 residents in the offseason. Summer commercial and guided sport fishing drive the local economy in this board walk community.

Employment by industry data for Port Alexander by the Alaska Department of Labor and Workforce Development are summarized in the table below. While no adults in Point Alexander were identified as unemployed and seeking work in 2013, an estimated 25 percent of the population was not employed and not seeking work (U.S. Census Bureau 2014b). Median household income was $56,250, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Port Alexander has no central utility system and residents rely upon individual generators.

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	10	39
Construction	2	8
Manufacturing	0	0
Trade, Transportation and Utilities	0	0
Information	0	0
Financial Activities	0	0
Professional and Business Services	0	0
Educational and Health Services	0	0
Leisure and Hospitality	2	8
State Government	1	4
Local Government	11	42
Other	0	0
Unknown	0	0
Total Employment	**26**	**100**

Source: Alaska DOL 2015d

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Port Alexander in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-50. This area contains 86,828 acres of NFS land (among other land ownerships). As shown in Table 3.23-49, no young-growth or old-growth harvest is projected to take place in the community use area for Pelican over the next 100 years under any alternative; therefore no timber-harvest-related effects to this area are expected.

Economy

Port Alexander is primarily a commercial fishing town. Commercial fishing and subsistence use are important to the community. Commercial fishing employment is not expected to be affected under any of the alternatives.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 55 percent of the total edible pounds of subsistence resources harvested by Port Alexander households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 55 percent of per capita subsistence harvest in Port Alexander in 1987 (ADF&G 2014).

Deer account for 36 percent of the total edible pounds of subsistence resources harvested by Port Alexander households (Kruse and Frazier, 1988). Deer accounted for 35 percent of per capita subsistence harvest by Port Alexander residents in 1987 (ADF&G 2014).

Port Alexander residents take the majority (71 percent) of their deer from one WAA (3734) on the south end of Baranof Island. This WAA is located within GMU 4. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). Among Port Alexander residents, deer harvest has fluctuated, and in 2013 was over four times as high than in 2004 (22 more deer) (ADF&G 2015b).

As shown in Table 3.23-50, WAA 3734 would not be affected under any of the alternatives as no timber harvest is proposed in these areas. It is also unlikely that Port Alexander residents would be affected by increased competition because of the limited access to this area.

Figure 3.23-50
Port Alexander's Community Use Area

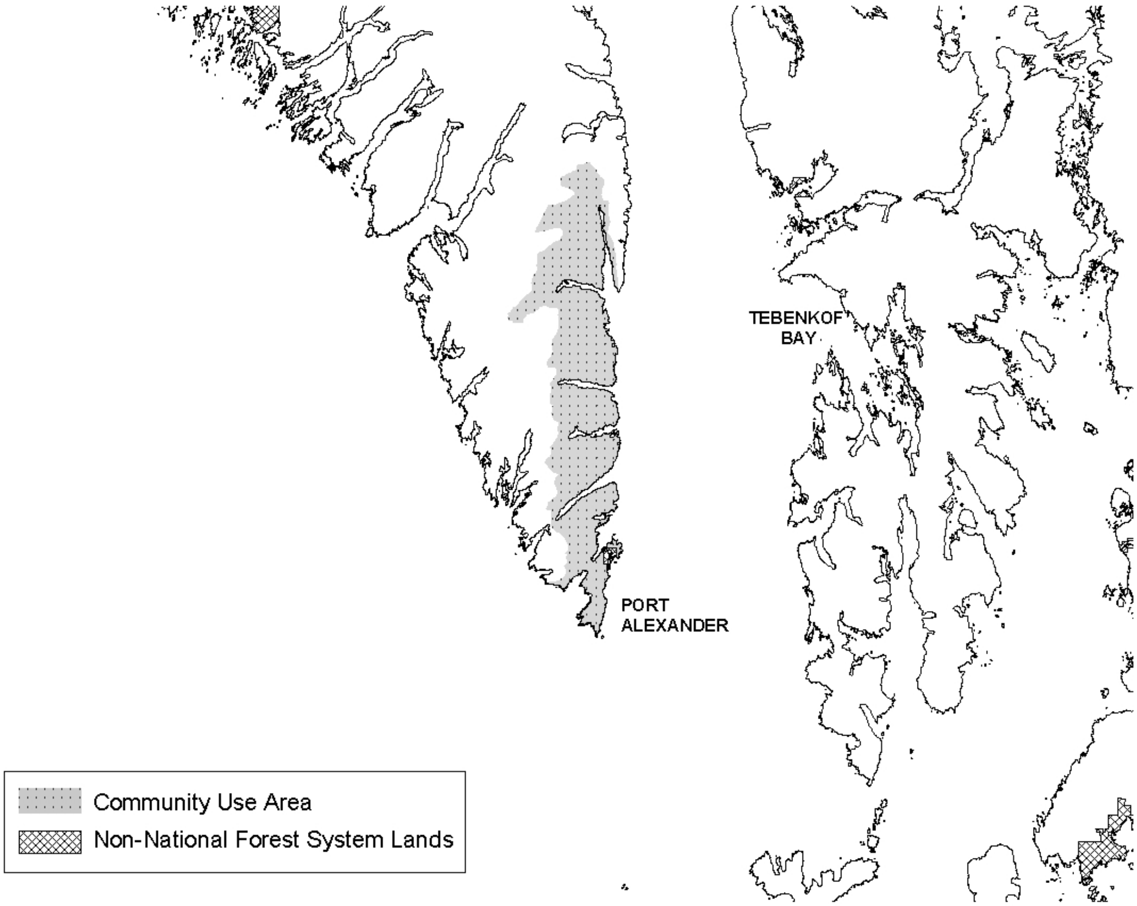


Table 3.23-49
Estimated Maximum Harvest (acres) over 100 Years in Port Alexander's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	0	0	0	0	0
Old Growth	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
Harvest as a Percent of Total NFS Lands in the Community Use Area	0.0%	0.0%	0.0%	0.0%	0.0%

Table 3.23-50
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Port Alexander Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	**Port Alexander Residents**	**All Rural Hunters[2]**	**All Hunters**	**2014**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 5**
3734	26	59	66	100%	100%	100%	100%	100%	100%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

Port Protection

Affected Environment

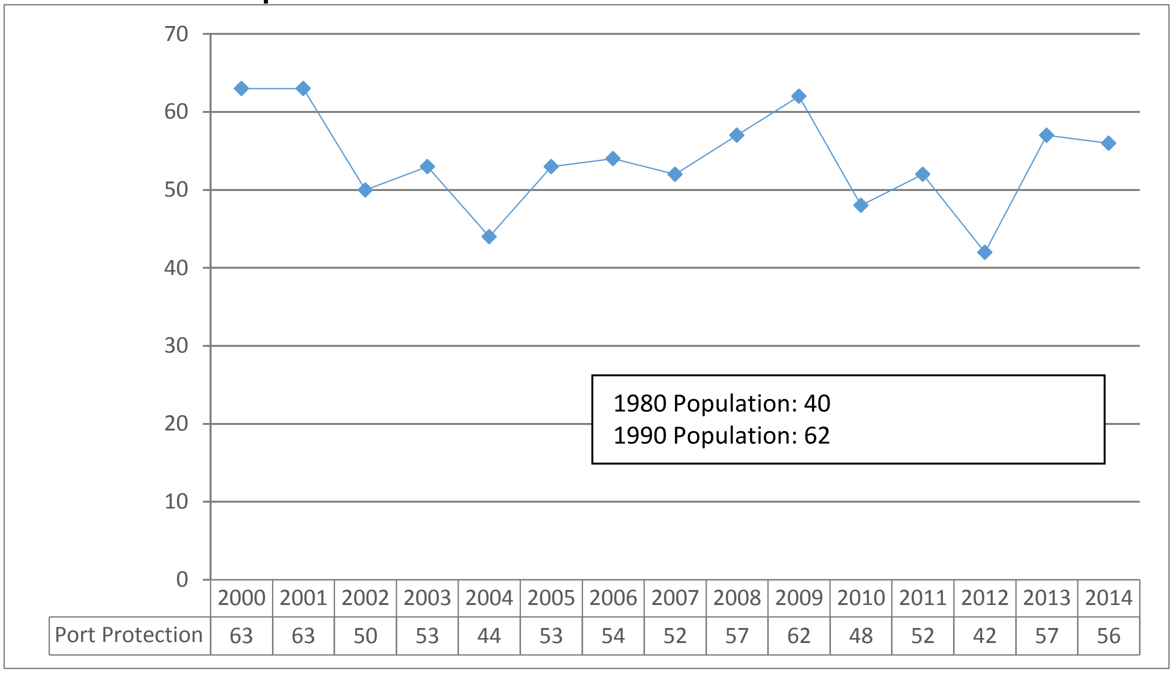
Overview and Demographic Characteristics

Port Protection, located on the northern end of Prince of Wales Island in a bay facing Sumner Strait, is only accessible by air and water. The community's setting along the waterfront of the cove requires skiff travel for most purposes (ADF&G 1994). The community of Port Protection is not incorporated or located within any other local government jurisdiction. Port Protection is part of the Prince of Wales-Hyder CA.

Port Protection was first reported to the western world by the English explorer George Vancouver in 1793. Signs of earlier indigenous occupation of the northern shoreline of Prince of Wales Island include stone and wooden stake fish weirs and traps, as well as shell middens of edible marine invertebrates (ADF&G 1994). A scow served as a fish-buying station until it was replaced in 1946 by a trading post. A long float dock accommodated many fishing boats at the post (ADF&G 1994).

The population of Port Protection, which increased by approximately 50 percent between 1980 and 1990, was approximately the same in 2000 as it was in 1990. The population decreased by an estimated 7 people or 11 percent between 2000 and 2014. Total estimated population was 56 in Port Protection in 2014 (Alaska DOL 2015b).

Figure 3.23-51
Port Protection Population 1980 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The Port Protection economy peaks during the fishing season in summer and fall. In 2013, one resident held a commercial fishing permit (ACFEC 2015) and some residents provide sport fishing charters. The school district, Port Protection Community Association, Woodenwheel Cove Trading Post, and the Rural Alaska Community Action Program provide are main employers (Himes-Cornell et al. 2013). Local residents also depend on subsistence for year-round support (Himes-Cornell et al. 2013).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. While no adults in Port Protection were unemployed and seeking work in 2013, an estimated 27 percent were unemployed and not seeking work (U.S. Census Bureau 2014b). Median household income was $27,875, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Port Protection has no central utility system and residents rely upon individual generators.

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	1	4
Construction	0	0
Manufacturing	0	0
Trade, Transportation and Utilities	5	21
Information	1	4
Financial Activities	0	0
Professional and Business Services	0	0
Educational and Health Services	0	0
Leisure and Hospitality	2	8
State Government	0	0

Employment by Industry in 2013	Number	Percent of Total
Local Government	4	17
Other	11	46
Unknown	0	0
Total Employment	**24**	**100**
Source: Alaska DOL 2015d		

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Port Protection in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-52. This area contains 706,627 acres of NFS land (among other land ownerships). Table 3.23-51 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. Total areas available for harvest range from about 8.7 percent of the Port Protection community use area under Alternative 1 to 11.6 percent under Alternatives 2 and 3. Harvest activities could have localized effects if they coincide with a particular location favored by Port Protection residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-51).

Figure 3.23-52
Port Protection's Community Use Area

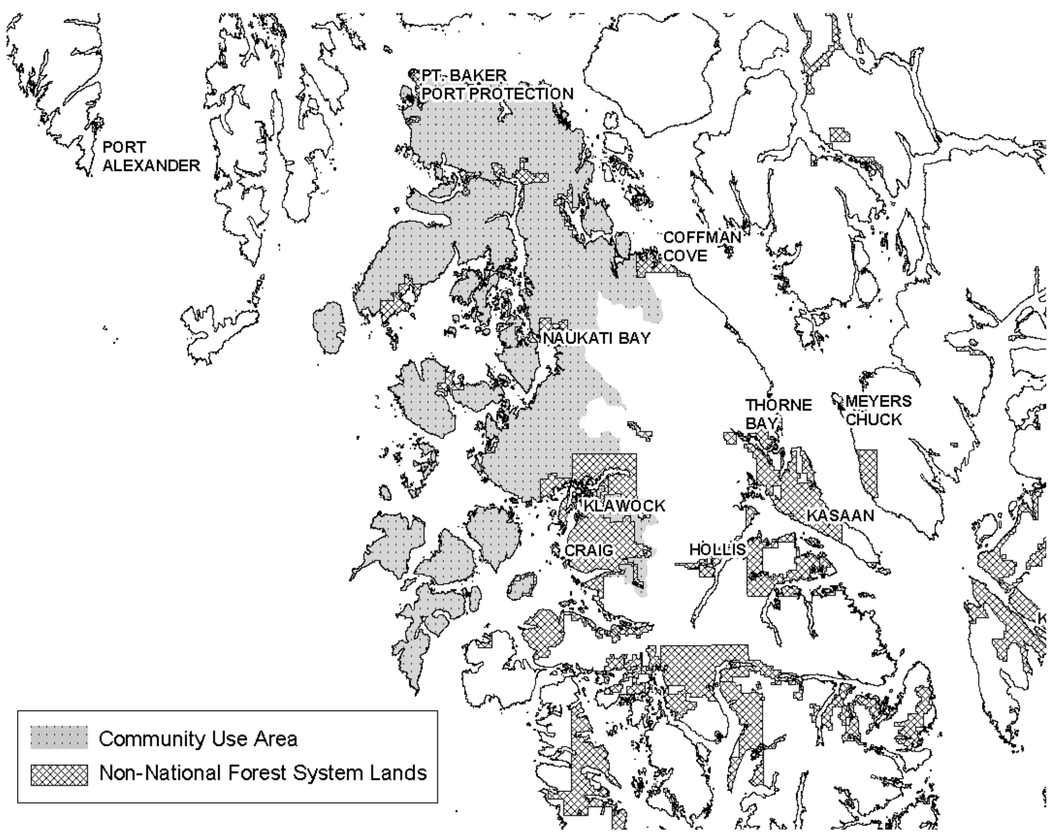


Table 3.23-51
Estimated Maximum Harvest (acres) over 100 Years in Port Protection's Community Use Area by Alternative

	Alternative				
	1	2	3	4	5
Young Growth	51,967	78,010	77,290	60,712	61,265
Old Growth	9,356	4,251	4,450	7,097	5,902
Total	**61,323**	**82,261**	**81,740**	**67,808**	**67,167**
Harvest as a Percent of Total NFS Lands in the Community Use Area	8.7%	11.6%	11.6%	9.6%	9.5%

Economy

Port Protection's economy primarily depends upon commercial fishing. Subsistence use is also important in this community. Commercial fisheries employment is not expected to be affected under any of the alternatives.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. Marine resources (fish and marine invertebrates) accounted for 69 percent of per capita subsistence harvest in Port Protection in 1996 (ADF&G 2014).

Deer accounted for 21 percent of per capita subsistence harvest by Port Protection residents in 1996 (ADF&G 2014).

Port Protection residents harvest deer almost entirely on Prince of Wales Island, which is included in GMU 2. Following a deer population decline 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Port Protection residents, total annual deer harvest is generally low, and in 2013 was 23 percent higher (3 more deer) than in 2004 (ADF&G 2015b).

Port Protection residents take the majority (64 percent) of their deer from two WAAs (Table 3.23-52). As shown in Table 3.23-52, the Port Protection portion of harvest represents about 3 percent of the total combined harvest and about 6 percent of the rural hunter harvest in these WAAs. About 41 percent of the harvest in these WAAs is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

Both WAAs occur in an area with substantial past harvest and, therefore, deer habitat capabilities are currently estimated to be considerably below 1954 levels (Table 3.23-52). Under each of the alternatives, additional harvest would occur that would reduce habitat capabilities after 100 years by a further 1 to 3 percent (Table 3.23-52).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted by Port Protection residents and by all hunters in the short-term. All of the 1997 alternatives included substantially higher levels of timber harvest in Port Protection's community use area than the alternatives considered in this EIS (approximately 40 to 263 percent higher). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the long term for deer hunted by Port Protection residents. However, the 1997 analysis found that, in the long term, the affected WAAs may not be able to provide deer for all rural hunters and all hunters. This may still be the case under all current alternatives.

Table 3.23-52
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Port Protection Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013[2]			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Port Protection Residents	All Rural Hunters[3]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1529	9	77	154	68%	65%	69%	69%	65%	65%
1317	1	93	133	58%	56%	56%	56%	57%	57%

[1] Calculated based on harvest where location is known.
[2] 2011 data not available for Port Protection residents.
[3] The category “All Rural Hunters” includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

In summary, use of most subsistence resources by Port Protection residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Port Protection’s subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Saxman

Affected Environment

Overview and Demographic Characteristics

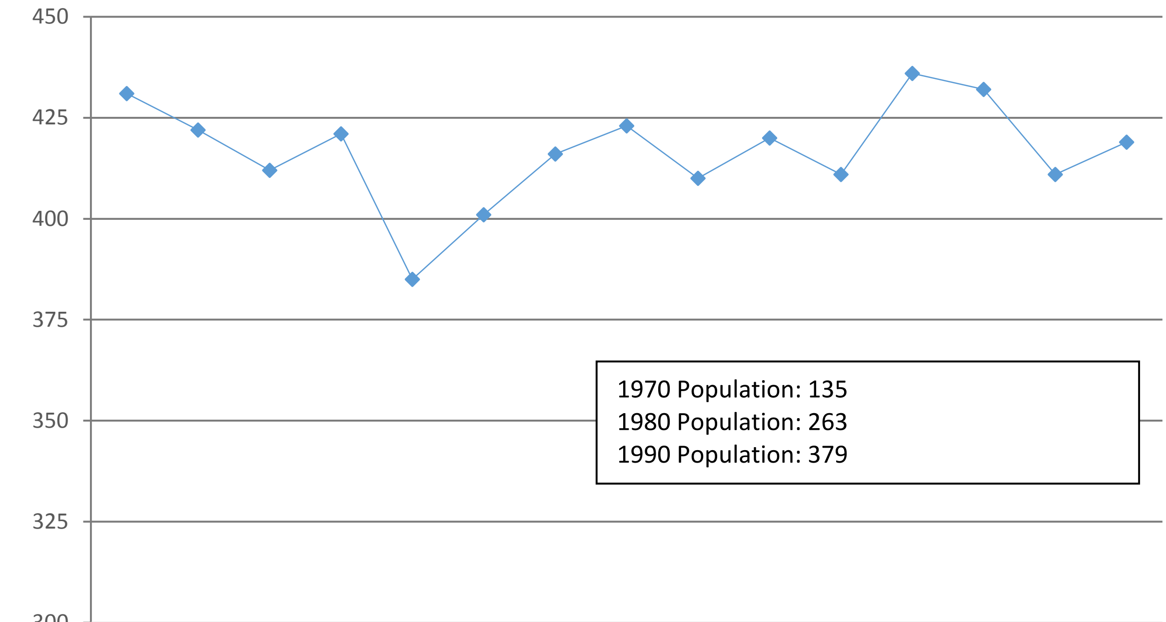
Saxman is located on west Revillagigedo Island on the Tongass Highway, about three miles south of Ketchikan. In 1894, Tlingits from the old Cape Fox and Tongass villages chose Saxman as the site for a new village and the location of a government school and a Presbyterian church. Saxman was incorporated in 1929 and was certified by the federal government as a second class municipal corporation. Three years later, the federal government issued a patent to 365 acres of land to the townsite trustee for Saxman (ADF&G 1994).

When the Ketchikan Gateway Borough was formed in 1963, Saxman was included within its boundaries. In 1971 and 1973, respectively, Saxman was recognized and then certified as a Native village under ANCSA. An elected mayor and six city council members constitute the governing body of the municipality as organized under state law. The community has a local Fish and Game Advisory Committee that has been considered inactive since mid-2010 (ADF&G 2015a).

When the Tlingits left their old villages to move to Saxman, they left behind houses, totems, carvings, and other cultural and ceremonial artifacts. In 1938, the Civilian Conservation Corps retrieved and brought to Saxman original totems from the abandoned villages and cemeteries of Tongass, Cat, and Pennock Islands, and Cape Fox. The Totem Park in Saxman has become a major attraction for Ketchikan area visitors (ADF&G 1994).

The population of Saxman almost tripled between 1970 and 1990, increasing from 135 in 1970 to 379 in 1990 (Figure 3.23-53). Population in Saxman has remained fairly constant since 2000, with 419 residents in 2014 down from 431 residents in 2000. Alaska Natives comprised 51 percent of the population in Saxman in 2010 (Table 3.23-8). The community of Saxman is served by the Ketchikan Gateway Borough School District.

Figure 3.23-53
Saxman Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Saxman	431	422	412	421	385	401	416	423	410	420	411	436	432	411	419

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Most employment opportunities for Saxman residents are in the City of Ketchikan. The City of Saxman, the Saxman Seaport, and the Cape Fox Corporation provide employment for a number of local residents. The Saxman Totem Park with a tribal house, a carving center, and a cultural hall for traditional Tlingit dance, has become an attraction for Ketchikan area visitors (Alaska DCED 2002).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. An estimated 22 percent of the labor force in Saxman was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $46,250, compared to the state median of $70,760; the corresponding median for the Ketchikan Gateway Borough was $62,519 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	1	1
Construction	13	7
Manufacturing	9	5
Trade, Transportation and Utilities	50	27

Employment by Industry in 2013	Number	Percent of Total
Information	0	0
Financial Activities	6	3
Professional and Business Services	2	1
Educational and Health Services	18	10
Leisure and Hospitality	29	16
State Government	15	8
Local Government	40	22
Other	3	2
Unknown	0	0
Total Employment	**186**	**100**

Source: Alaska DOL 2015d

Saxman is currently served by Ketchikan Public Utilities, sourced from a mix of hydroelectricity and diesel generation (Southeast Conference 2015). Ketchikan Public Utilities residential rates for 2011 before and after the application of PCE payments were both 10 cents/kWh (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 10 cents/kWh and 8 cents/kWh, respectively. The City of Saxman holds a FERC license issued in 1998 to construct the 9.6 MW Mahoney Lake Hydroelectric Project; as of 2015, this project has not been built (Table 3.12b-3).

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Saxman in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-54. This area contains 1,975,123 acres of NFS land (among other land ownerships). Table 3.23-53 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Saxman, ranging from about 1.3 percent (Alternative 1) to 2.0 percent (Alternative 3). Harvest activities could have localized effects if they coincide with a particular location favored by Saxman residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old growth harvest in this area (see Table 3.23-53).

Economy

Saxman, a traditional native community, could be affected primarily by changes in recreation and tourism use, commercial fishing, timber processing, and subsistence opportunities. Commercial fisheries employment is not expected to be affected under any of the alternatives. Recreation and tourism in Saxman is also unlikely to be affected under any of the alternatives.

The proposed Mahoney Lake Hydroelectric Project is located in a Semi-Remote Recreation LUD and Inventoried Roadless Area 524. Semi-Remote Recreation is considered a TUS “window” under the 2008 Forest Plan, an area potentially available for the location of transportation or utility corridors and sites. This classification and the standards and guidelines in the current Forest Plan would continue to apply under Alternative 1. Under Alternatives 2 through 5, energy projects would be managed under the Renewable Energy Plan Components identified in Chapter 5 of the proposed amended Forest Plan.

Figure 3.23-54
Saxman's Community Use Area

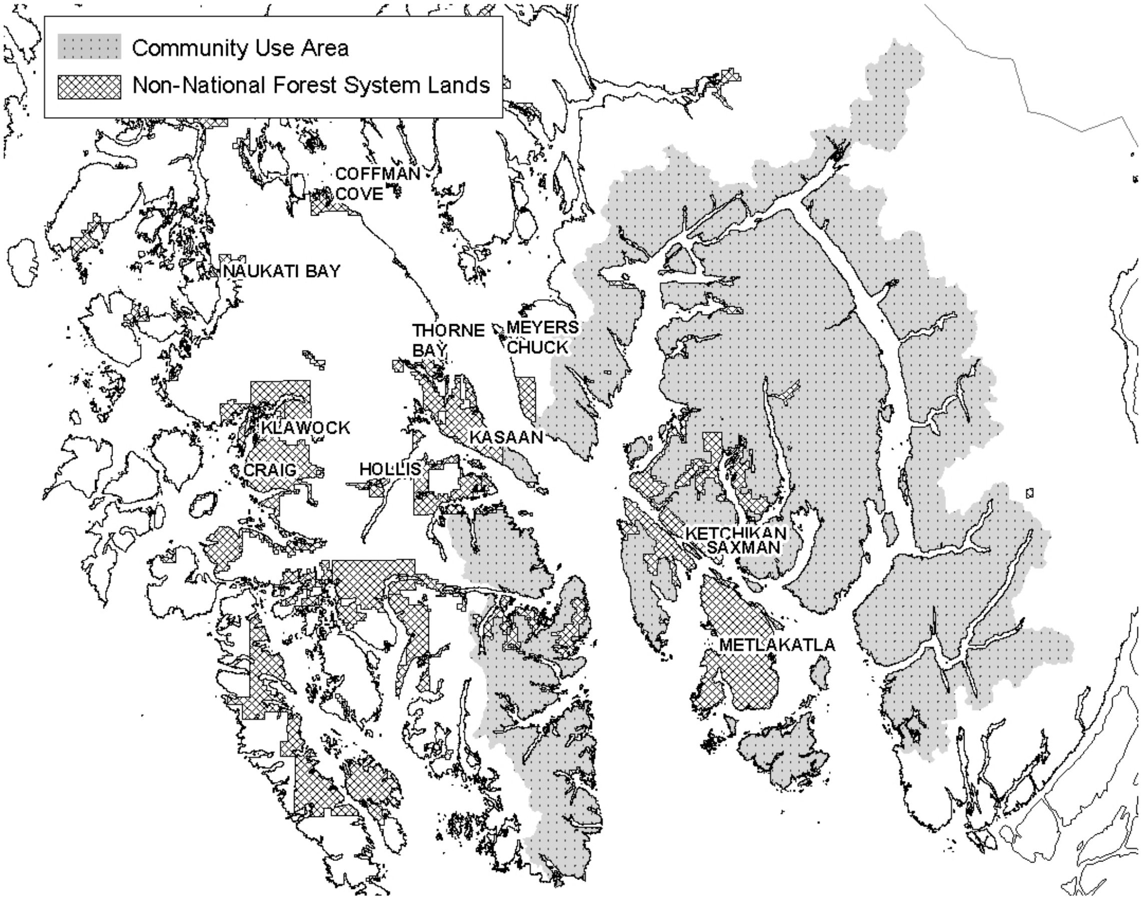


Table 3.23-53
Estimated Maximum Harvest (acres) over 100 Years in Saxman's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	20,284	33,533	33,248	26,392	25,562
Old Growth	5,393	2,639	5,735	4,411	3,669
Total	**25,678**	**36,172**	**38,983**	**30,804**	**29,231**
Harvest as a Percent of Total NFS Lands in the Community Use Area	1.3%	1.8%	2.0%	1.6%	1.5%

Subsistence

No significant decline in salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 68 percent of the total edible pounds of subsistence resources harvested by Saxman households (Kruse and Frazier, 1988). Marine resources (fish and marine invertebrates) accounted for 70 percent of per capita subsistence harvest in Saxman in 1999 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 19 percent of the total edible pounds of subsistence resources harvested by Saxman households (Kruse and Frazier 1988). Land mammals (mostly deer) accounted for 13 percent of per capita subsistence harvest by Saxman residents in 1999 (ADF&G 2014).

Data were not provided separately for Saxman in the ADF&G deer harvest reports for 2004 to 2013. The majority of deer harvest by Saxman residents likely takes place in GMU 1A. As of 2013, deer numbers were at very low levels throughout most of GMU 1A and were no longer meeting local hunter demands or established deer harvest objectives (Harper 2013). Though not closed, starting in 2011 the deer hunting season was shortened to August 1 through November 30 instead of continuing through December. Hunters are known to be shifting efforts to other more productive areas, such as nearby GMU 2, leading to less hunter effort and fewer deer harvested in GMU 1A (Harper 2013).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide habitat capability for deer hunted in the Saxman community use area by Saxman residents, all rural hunters, and all hunters in the short term. All alternatives were also estimated to provide sufficient habitat capability for Saxman residents and all rural hunters in the long term. All of the 1997 alternatives included substantially higher levels of timber harvest in Saxman's community use area than the alternatives considered in this EIS (approximately 3 to 11 times as high). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the long term for deer hunted by Saxman residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to produce deer populations sufficient to avoid effects on hunter success for all hunters in the long term. This may still be the case under all current alternatives.

In summary, use of most subsistence resources by Saxman residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, under all alternatives.

Sitka

Affected Environment

Overview and Demographic Characteristics

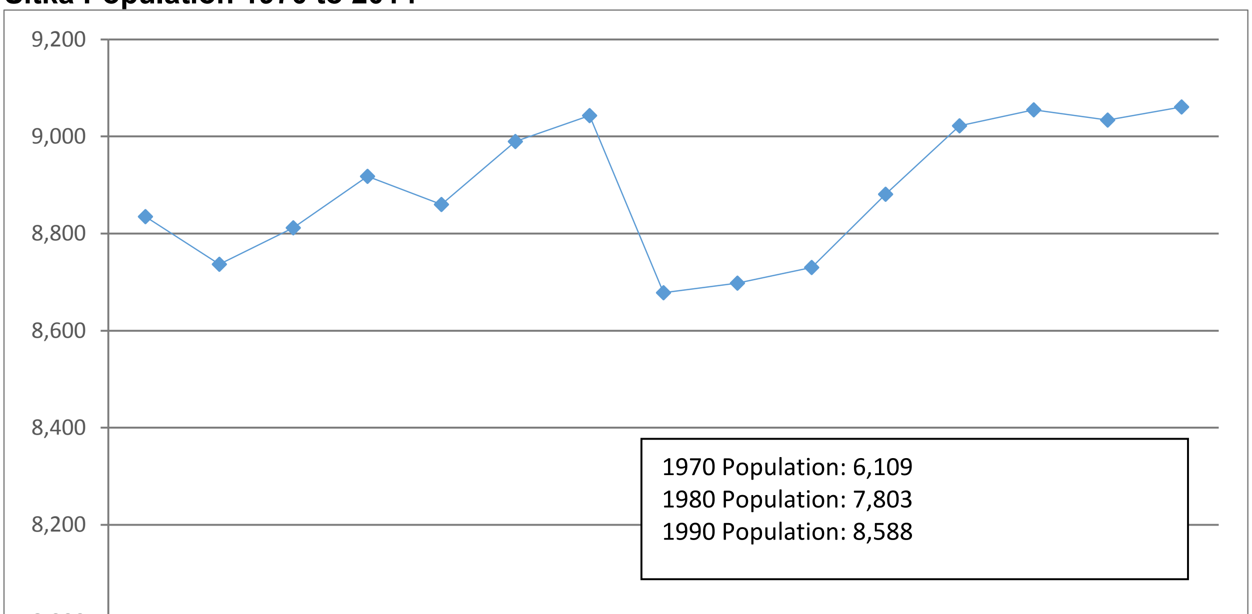
Located on the west side of Baranof Island, Sitka is the only community in Southeast Alaska that fronts the open sea. Sitka was originally inhabited by a major tribe of Tlingits who called the village "Shee Atika." Traditionally, the Tlingits used a wide area surrounding the community for hunting, fishing, and gathering wild resources. The site became "New Archangel" in 1799, the capital of Russian America (ADF&G 1994).

Sitka became the focal point of Russian fur trade in North America beginning in 1741. During the mid-1800s, Sitka was the major port on the north Pacific coast, with ships calling from many nations. After the purchase of Alaska by the United States in 1867, it remained the capital of the Territory until 1906, when the seat of government moved to Juneau. During the early 1900s gold mines contributed to its growth, and during World War II the town was fortified. After the war, the Bureau of Indian Affairs converted some of the buildings to a boarding school for Alaska Natives (ADF&G 1994). The APC pulp mill operated in Sitka from 1959 through 1993, employing almost 400 people at the time of closure.

The population of Sitka grew by 41 percent between 1970 and 1990, increasing from 6,109 residents in 1970 to 8,588 residents in 1990 (Figure 3.23-55). The population in Sitka has remained fairly constant sine 1990, increasing by 3 percent between 1990 and 2000, and another 3 percent or an estimated 226 residents between 2000 and 2014. Total estimated population was 9,061 in Sitka in 2014. Alaska Natives comprised 17 percent of the population in Sitka in 2010 (Table 3.23-8).

While the population in Sitka has remained fairly constant over the past two decades or so, it has been aging at faster than normal rates (Alexander et al. 2010). This is reflected in the school district enrollment, with enrollment dropping from 2,008 students in 1990 to 1,796 students in 2014 (Table 3.23-9).

Figure 3.23-55
Sitka Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Sitka	8,835	8,737	8,812	8,918	8,860	8,990	9,043	8,678	8,698	8,730	8,881	9,022	9,055	9,034	9,061

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Sitka has a diversified economy, with tourism, fishing, fish processing, government, health care services, transportation, and retail all contributing to its base (Himes-Cornell et al. 2013). In 2013, 574 residents held commercial fishing permits, with estimated gross earnings of over $48 million (ACFEC 2015). The seafood industry is a major employer, as well as regional health care services, the Forest Service, and the U.S. Coast Guard (Himes-Cornell et al. 2013).

A study conducted by the Alaska DOL in 2003 suggested that Sitka's economy appears to have survived the downturn in its economy caused by the pulp mill closure, in large part because it has a relatively diversified economy (Gilbertson 2003). While the community of Sitka does not appear to have been as negatively affected by the closure of the pulp mill as some predicted, the effects have been felt by the workers who lost their jobs. By 2001, 57 percent of the former pulp mill labor force were no longer employed in Alaska, 43 percent had left the State, and 14 percent were in the State but had left the workforce, most likely retired.

Only 25 percent of the former pulp mill workers were still living and working in Sitka (Gilbertson 2003).

Nature-based tourism in Sitka is less dominated by large cruise ships than in the other coastal communities with independent travelers making up a larger share of total visitors (Dugan et al. 2009). Multi-day fishing packages and kayaking and hunting are popular nature-based tourist activities operating from Sitka. Overall, nature-based tourism generated nearly $74 million in revenue in 2006 (Dugan et al. 2009).

Sitka experienced an estimated high of 289,000 cruise ship passengers in 2008, followed by a steady decline to an estimated low of 90,000 passengers in 2014. (SEDA 2015). In September 2012, a new deepwater dock opened for cruise ships in Sitka, making it possible for non-lightering cruise vessels to visit Sitka, resulting in additional visits beyond projections. In 2014, Sitka had almost 106,000 cruise ship passengers (not counting smaller cruise vessels such as Disney and National Geographic), with 19 percent of passengers disembarking at the new deepwater dock (known as the “Old Sitka Dock”) located near Old Sitka (SEDA 2015). The remaining cruise ships anchor offshore and transport passengers to Sitka on smaller lightering vessels. In 2015, the large cruise ship industry anticipates a 28 percent increase in passenger visits, to 130,000 (SEDA 2015).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. An estimated 5 percent of the labor force in Sitka was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $69,405, compared to the state median of $70,760 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	54	1
Construction	252	7
Manufacturing	262	7
Trade, Transportation and Utilities	657	17
Information	44	1
Financial Activities	113	3
Professional and Business Services	197	5
Educational and Health Services	702	19
Leisure and Hospitality	347	9
State Government	374	10
Local Government	702	19
Other	99	3
Unknown	0	0
Total Employment	**3,803**	**100**

Source: Alaska DOL 2015d

Sitka is currently served by the Blue Lake and Green Lake hydropower projects run by the City and Borough of Sitka (Table 3.12b-2). The system cannot meet Sitka’s full energy demand, and is supplemented by diesel generation during peak load hours on a daily basis (Alexander et al. 2010). The Blue Lake Expansion project was completed in 2015 and increased electricity output for Sitka by about 27 percent (Blue Lake Expansion Project 2015).

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Sitka in their local day-to-day work, recreational, and subsistence activities is shown on

Figure 3.23-56. This area contains 425,121 acres of NFS land (among other land ownerships). Table 3.23-54 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Sitka, ranging from about 0.9 percent (Alternative 4) to 3.1 percent (Alternative 2). Harvest activities could have localized effects if they coincide with a particular location favored by Sitka residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternative 3; however, it may be noted that Alternative 1 (which would have less potential total suitable harvest compared to Alternative 3) would have the largest potential old-growth harvest in this area (see Table 3.23-54).

Economy

Commercial fishing, recreation and tourism, and subsistence are important to Sitka residents. Commercial fishing is not expected to be significantly affected under any of the alternatives. None of the alternatives are expected to affect recreation and tourism-related employment in Sitka.

Figure 3.23-56
Sitka's Community Use Area

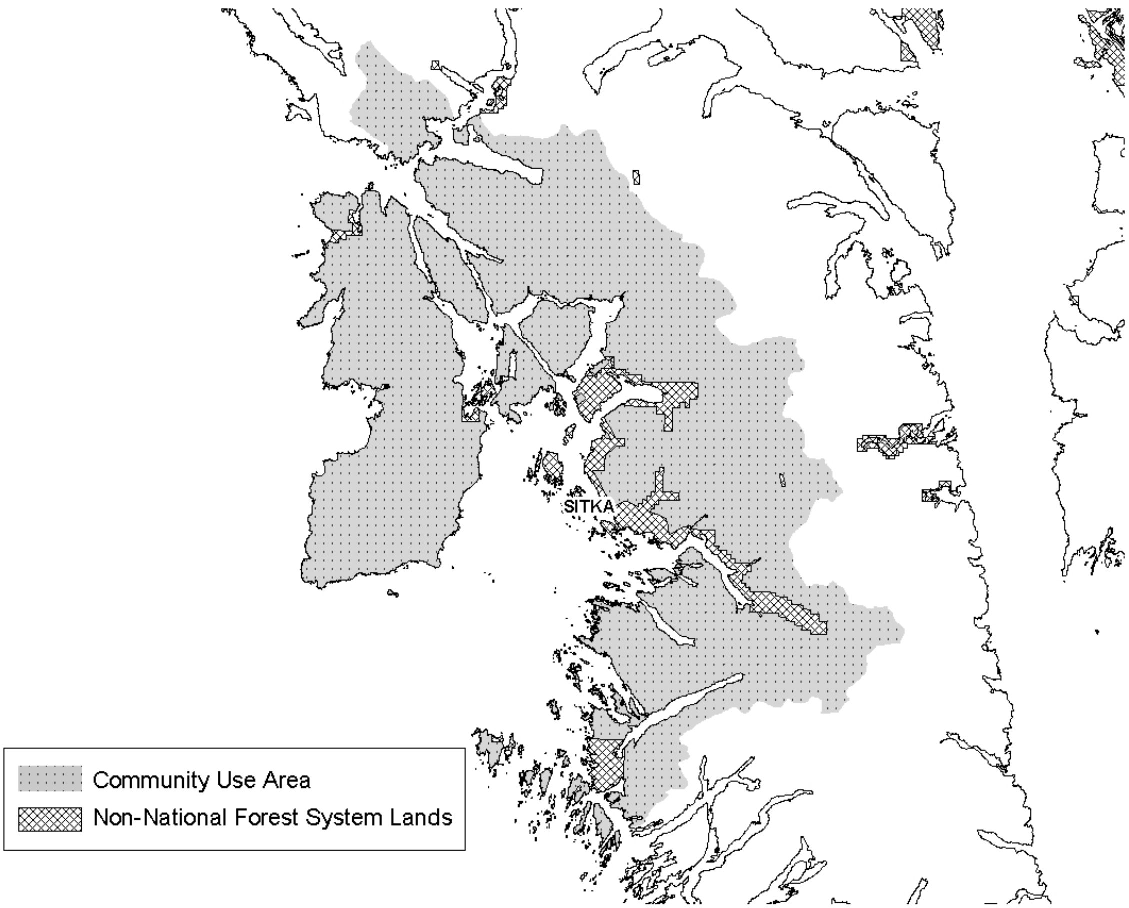


Table 3.23-54
Estimated Maximum Harvest (acres) over 100 Years in Sitka's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	4,550	12,889	8,641	3,435	9,024
Old Growth	880	395	486	437	608
Total	**5,429**	**13,283**	**9,127**	**3,872**	**9,633**
Harvest as a Percent of Total NFS Lands in the Community Use Area	1.3%	3.1%	2.1%	0.9%	2.3%

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 69 percent of the total edible pounds of subsistence resources harvested by Sitka households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 68 percent of per capita subsistence harvest in Sitka in 1996 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 27 percent of the total edible pounds of subsistence resources harvested by Sitka households (Kruse and Frazier, 1988). Deer accounted for 22 percent of per capita subsistence harvest by Sitka residents in 1996 (ADF&G 2014).

Sitka residents mainly harvest deer on Baranof Island, which is included in GMU 4. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). Among Sitka residents, total annual deer harvest has fluctuated in recent years, and in 2013 was 20 percent lower (525 fewer deer) than in 2004 (ADF&G 2015b).

Sixteen WAAs account for the majority (75 percent) of deer harvest by Sitka residents. As shown in Table 3.23-55, the Sitka portion represents about 97 percent of the rural hunter harvest and 87 percent of the total harvest in these WAAs. About 11 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is little harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

Of the 16 WAAs used most heavily by Sitka residents, under all alternatives only one would have a reduction in deer habitat capability (Table 3.23-55). In WAA 3308, Alternatives 1, 4, and 5 would further reduce deer habitat capability after 100 years of Forest Plan implementation by one percent (Table 3.23-55).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that at that time, Sitka residents were harvesting deer at a rate above what was considered both sustainable and able to provide a reasonably high level of hunter success. In addition, all 1997 alternatives would not be able to provide sufficient habitat capability for deer hunted in the Sitka community use area by Sitka residents, all rural hunters, and all hunters in the short term or long term. The Final EIS analysis concluded that at some point a restriction in hunting might be necessary. The 1997 alternatives all included more timber harvest than the alternatives considered in this EIS, ranging from about 47 percent to over 1,800 percent higher (or 19 times as high). Due to the lower level of timber harvest, and minimal change in deer habitat capability, it is unlikely any of the current alternatives would have a noticeable effect on the availiabity of deer for Sitka hunters. However, as in the 1997 analysis, in the long term a restriction in hunting may be necessary under all alternatives due to existing circumstances.

In summary, use of most subsistence resources by Sitka residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may reach a point that some restriction in hunting might be necessary over the long term, under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Sitka's subsistence, use areas could also occur under all alternatives if hunters from other communities were displaced due to timber production activity.

Table 3.23-55
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Sitka Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Sitka Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
3001	334	338	361	82%	82%	82%	82%	82%	82%
3002	268	272	299	69%	69%	69%	69%	69%	69%
3003	144	144	152	86%	88%	87%	87%	86%	86%
3314	122	123	136	90%	90%	90%	90%	90%	90%
3311	112	113	127	97%	98%	98%	98%	98%	98%
3313	106	107	125	97%	98%	98%	98%	98%	98%
3310	88	92	100	92%	93%	93%	93%	93%	93%
3207	86	88	94	100%	101%	101%	101%	101%	101%
3104	73	75	84	74%	74%	76%	75%	76%	74%
3416	71	78	88	100%	100%	100%	100%	100%	100%
3309	70	72	81	100%	99%	99%	100%	100%	100%
3733	69	77	81	100%	100%	100%	100%	100%	100%
3312	68	69	76	95%	95%	95%	95%	95%	95%
3206	61	63	68	100%	101%	101%	101%	101%	101%
3105	56	58	68	99%	99%	100%	99%	99%	99%
3308	52	61	107	66%	65%	66%	66%	65%	65%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

Skagway

Affected Environment

Overview and Demographic Characteristics
Skagway is located in northern Southeast Alaska at the head of Taiya Inlet, 95 air miles north of Juneau. It is the end-of-the line for the Alaska Marine Highway System and the entrance to the Klondike Highway. The area was initially settled by Chilkoot Tlingit who called it "Skagua," or "the place where the north wind blows." The Chilkoots controlled access into the interior along what has become known as the Chilkoot Trail, which follows along the Taiya River and over the

3 Environment and Effects

Chilkoot Pass. The Chilkoot Trail was a major trade route for the Chilkoot Tlingit, interior Tlingit, and Athabaskans (ADF&G 1994).

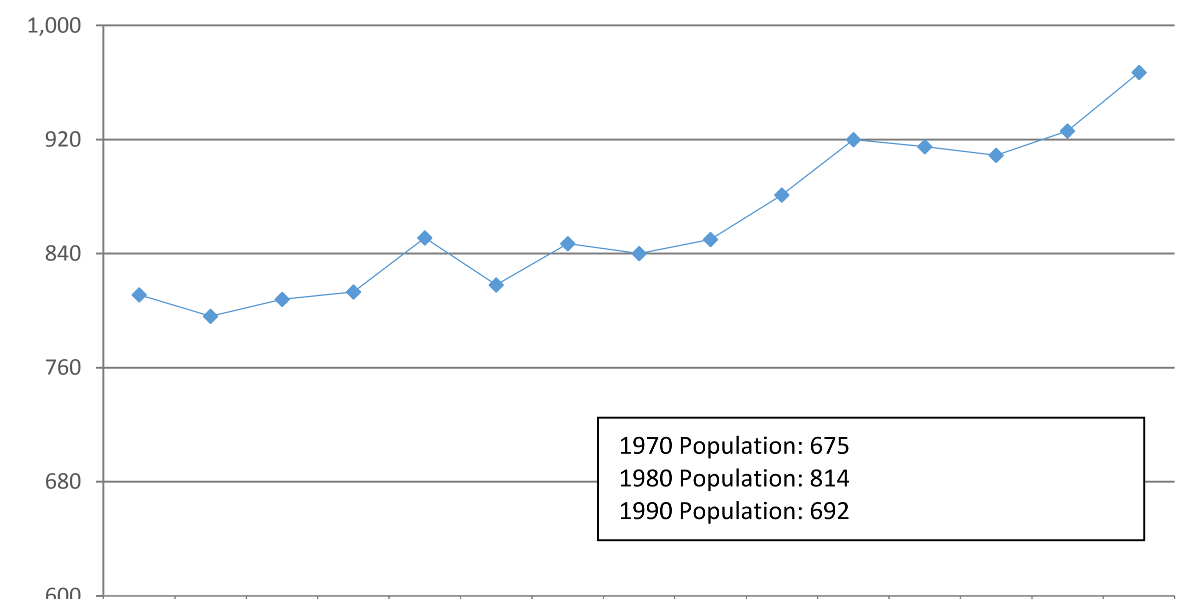
The current settlement began in Skagway in 1887 when a seafarer named William Moore decided to develop a trading and mining route into the Yukon Territory using the Chilkoot Trail. As the Klondike gold rush hit the area in 1896, the Chilkoot and White Pass trails became the major routes into the Interior. Within a few years, the trails were superseded by the adjacent White Pass and Yukon Railway. The railway continued to function as a supply and shipping route between Skagway and Whitehorse until 1982 (ADF&G 1994). The railway currently operates as a tourist attraction.

Skagway became the first incorporated first-class city in Alaska in 1900. During 2007, the city government dissolved and the Municipality of Skagway Borough formed. The community participates in the Upper Lynn Canal Fish and Game Advisory Committee (ADF&G 2015a).

The population of Skagway, which declined between 1980 and 1990, increased by 170 people or 25 percent between 1990 and 2000 (Figure 3.23-57). The population continued to increase by an estimated 156 residents or 19 percent between 2000 and 2014. Total estimated population was 957 in Skagway in 2014 (Alaska DOL 2015b). Alaska Natives comprised 4 percent of the population in Skagway in 2010 (Table 3.23-8).

Despite the steady increase in population in Skagway over the past two decades or so, school enrollment has dropped, falling by more than a third between 2000 and 2014, with 132 and 86 students enrolled in 2000 and 2014, respectively (Table 3.23-9). Local leaders reportedly attribute this decline to the closure of the year-round railroad operation of the White Pass-Yukon Railroad (Alexander et al. 2010).

Figure 3.23-57
Skagway Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Skagway	811	796	808	813	851	818	847	840	850	881	920	915	909	926	967

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Skagway has a strong base in the tourism industry. It is a port of call for cruise ships and a transfer site for interior rail and bus tours. The Alaska Marine Highway System also connects travelers to the rest of Southeast Alaska. More than 600,000 cruise ship passengers and numerous state ferry travelers visit Skagway each year. Skagway is also the site of trans-shipment of lead/zinc ore, fuel, and freight via the Port and Klondike Highway to and from Canada (Alaska DCED 2002; 2006).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. An estimated 8 percent of the labor force in Skagway was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $71,435, compared to the state median of $70,760 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	0	0
Construction	18	5
Manufacturing	10	3
Trade, Transportation and Utilities	155	39
Information	0	0
Financial Activities	9	2
Professional and Business Services	13	3
Educational and Health Services	9	2
Leisure and Hospitality	77	19
State Government	16	4
Local Government	84	21
Other	9	2
Unknown	0	0
Total Employment	**400**	**100**

Source: Alaska DOL 2015d

Skagway is part of an AP&T system that connects Haines and Skagway in the Upper Lynn Canal Region, and is connected via an intertie to the existing Inside Passage Electric Cooperative system that serves Klukwan and Chilkat Valley. The existing AP&T Goat Lake and Dewey Lakes hydropower projects support this system (Table 3.12b-2). Residential rates for 2011 before and after the application of PCE payments were 22 cents/kWh and 15 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 22 cents/kWh.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Skagway in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-58. This area contains 199,938 acres of NFS land (among other land ownerships). As shown in Table 3.23-56, no young-growth or old-growth harvest is projected to take place in the community use area for Skagway over the next 100 years under any alternative; therefore no timber-harvest-related effects to this area are expected.

There are no acres within the Skagway Community Use Area allocated to Wilderness/National Monument LUDs under any of the alternatives.

Figure 3.23-58
Skagway's Community Use Area

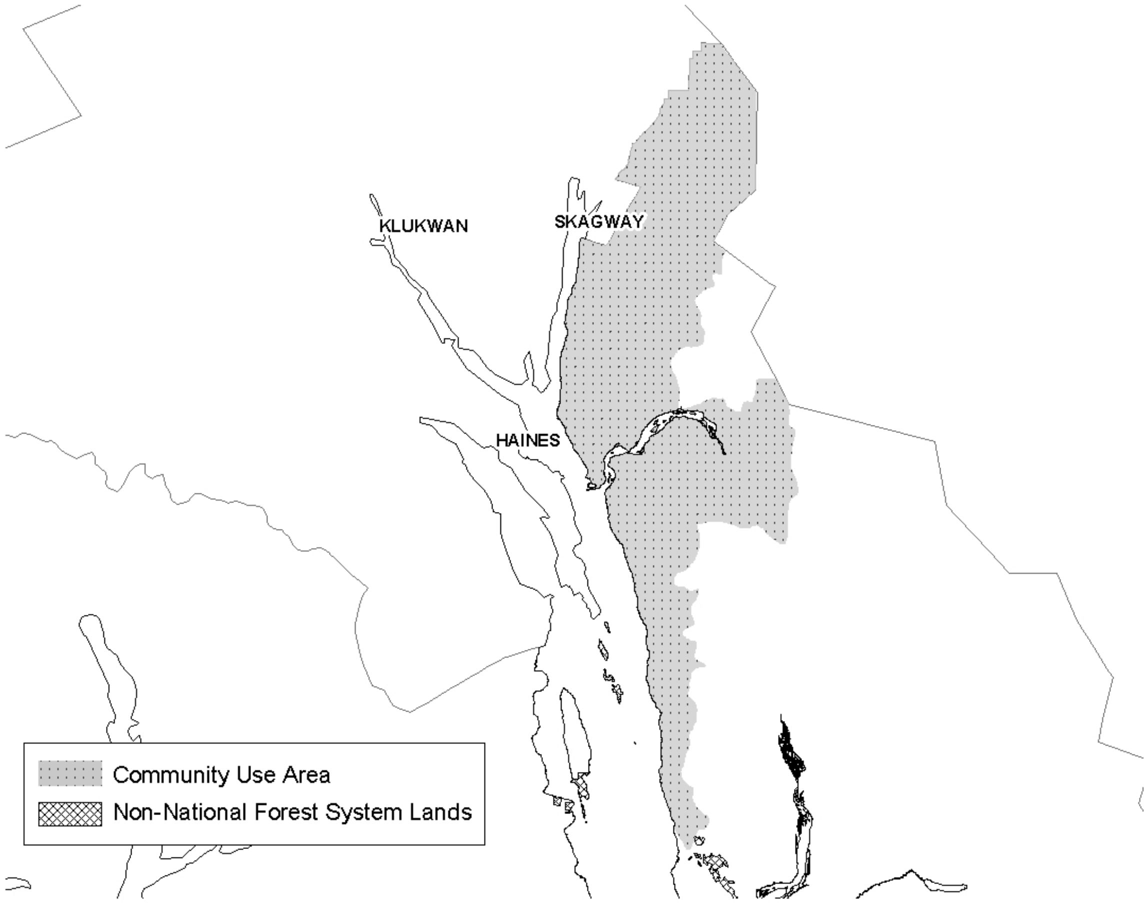


Table 3.23-56
Estimated Maximum Harvest (acres) over 100 Years in Skagway's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	0	0	0	0	0
Old Growth	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**
Harvest as a Percent of Total NFS Lands in the Community Use Area	0.0%	0.0%	0.0%	0.0%	0.0%

Economy

Recreation, tourism, and subsistence use are important to the community of Skagway. None of the alternatives are expected to affect recreation and tourism-related employment in Skagway.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 88 percent of the total edible pounds of subsistence resources harvested by Skagway households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 88 percent of per capita subsistence harvest in Skagway in 1987 (ADF&G 2014).

The 1988 TRUCS study found that deer account for only a small fraction of the total edible pounds of subsistence resources harvested by Skagway households (Kruse and Frazier, 1988). Deer accounted for 7 percent of per capita subsistence harvest by Skagway residents in 1987 (ADF&G 2014).

Skagway residents primarily harvest deer in four WAAs (Table 3.23-57); three of these WAAs are located in GMU 4; the other is located in GMU 1C. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). Deer populations in GMU 1C have historically fluctuated with periodic severe winter weather, most recently during the winter of 2006-2007. The snow pack led to a substantial deer die off, and opportunities to harvest deer will likely improve in the coming years if winter weather isn't too severe (Harper 2013). Skagway residents harvested very few deer from 2004 to 2013 (Table 3.23-57). Residents harvested an annual average of two to four deer over this period.

As shown in Table 3.23-57, the four WAAs used by Skagway residents would not be affected by any of the alternatives as no timber harvest is proposed in these areas. Indirect effects could occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Table 3.23-57
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Skagway Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013[2]			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Skagway Residents	All Rural Hunters[3]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
3836	4	16	210	100%	100%	100%	100%	100%	100%
2515	2	1	12	100%	100%	100%	100%	100%	100%
2722	2	6	302	100%	100%	100%	100%	100%	100%
4044	2	6	57	98%	98%	98%	98%	98%	98%

[1] Calculated based on harvest where location is known.
[2] Data from 2007 and 2008 not available for Skagway residents.
[3] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

Tenakee Springs

Affected Environment

Overview and Demographic Characteristics

Tenakee Springs is located 50 miles northeast of Sitka on the north shore of Tenakee Inlet (east Chichagof Island). Tenakee Springs, accessible only by floatplane or boat, is a stop on the Alaska Marine Highway System.

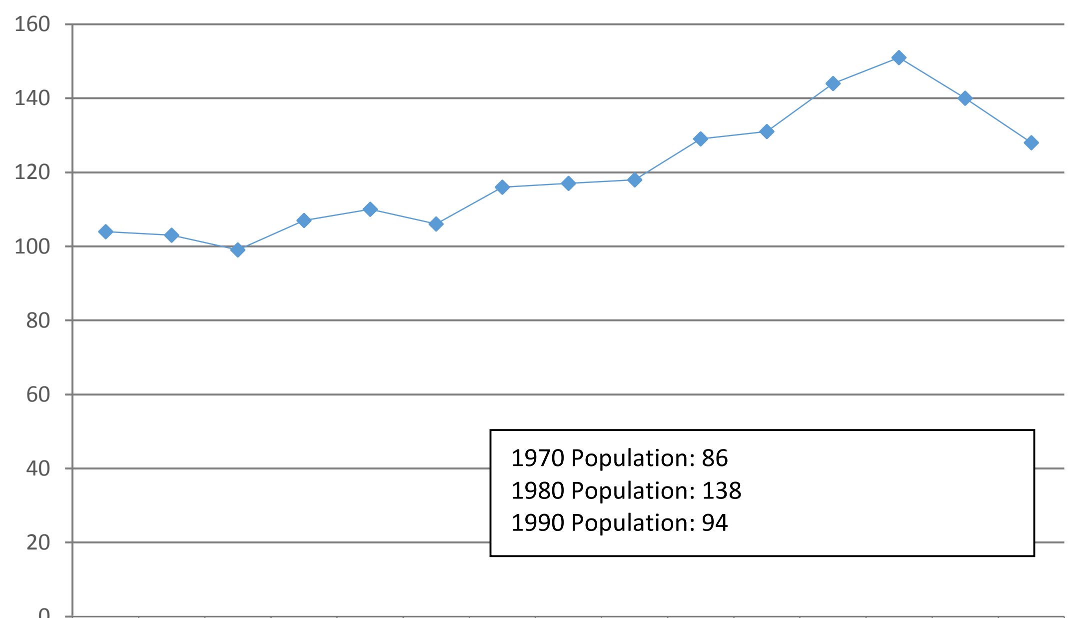
A Tlingit winter village site was historically located in the vicinity of the present-day harbor and a summer village was located across the Inlet at Kadashan Bay (ADF&G 1994). Early prospectors and fishermen came to the site to wait out the winters and enjoy the natural hot springs in Tenakee. Around 1895, a large tub and building were constructed to provide a warm bathing place. The 108-degree sulfur springs is the social focus of the community, with bathing times scheduled for men and women.

In 1904, E. Snyder bought a tract of land from a Tlingit resident, including a house located near the public bathhouse. The post office, established in 1903, used the name Tenakee. In 1928, the community's name was changed to Tenakee Springs. The community has a local Fish and Game Advisory Committee (though currently inactive), and many residents practice a subsistence lifestyle, actively exchanging resources with neighbors (ADF&G 1994, 2015c).

Residents use four wheelers on the single dirt road in the community, but no vehicles, other than the city-owned fuel truck, are allowed access. The harbor is poorly protected, especially during the winter storms and unloading barged supplies can be challenging (Alexander et al. 2010).

Tenakee Springs' population fluctuated between 1980 and 2000. The population has generally trended upward since 2000, increasing from 104 in 2000 to 128 in 2014, with a peak estimated population 151 in 2012 (Figure 3.23-59). Alaska Natives comprised 1 percent of the population in Tenakee Springs in 2010 (Table 3.23-8). School enrollment has hovered around 10 students since 1990, with total enrollment of 12 students in 2014 (Table 3.23-9).

Figure 3.23-59
Tenakee Springs Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Tenakee Springs	104	103	99	107	110	106	116	117	118	129	131	144	151	140	128

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Tenakee Springs is often considered a retirement and vacation community, though fishing and tourism are important sources of income (Himes-Cornell et al. 2013). The City, State of Alaska, local store, school, bakery, and post office are main employers (Himes-Cornell et al. 2013).

An estimated 25 percent of the homes in Tenakee Springs are second homes. Tourism activities are limited to two family-run marine charters and Tenakee Springs residents have been vocal in their opposition to tourism development (Dugan et al. 2009). The Chichagof Conservation Council noted in 2007 that small-scale, locally-owned businesses catering to independent travelers are a large part of the Tenakee Springs economy. Local residents opposed cruise ship development, not all tourism development.

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. An estimated 5 percent of the labor force in Tenakee Springs was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $62,813, compared to the state median of $70,760; the corresponding median for the Hoonah-Angoon CA was $49,545 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	**Number**	**Percent of Total**
Natural Resources and Mining	1	2
Construction	8	18
Manufacturing	0	0
Trade, Transportation and Utilities	7	16
Information	0	0
Financial Activities	0	0
Professional and Business Services	1	2
Educational and Health Services	1	2
Leisure and Hospitality	1	2
State Government	5	11
Local Government	21	47
Other	0	0
Unknown	0	0
Total Employment	**45**	**100**

Source: Alaska DOL 2015d

Tenakee Springs has the second highest electricity rates in the region due to the use of diesel generated power (tied with the community of Pelican). Residential rates for 2011 before and after the application of PCE payments were 69 cents/kWh and 31 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 69 cents/kWh. The City of Tenakee Springs is constructing an 180 kW run-of-river hydroelectric project on Indian River (Table 3.12b-3). The project would supply approximately 90 percent of the city's electricity use, reducing diesel use and lowering rates substantially.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Tenakee Springs in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-60. This area contains 196,031 acres of National Forest the System land (among other land ownerships). Table 3.23-58 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for

Tenakee Springs, ranging from about 2.1 percent (Alternative 4) to 3.6 percent (Alternative 2). Harvest activities could have localized effects if they coincide with a particular location favored by Tenakee Springs residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternative 2; however, it may be noted that Alternative 1 (which would have less potential total suitable harvest compared to Alternative 2) would have the largest potential old-growth harvest in this area (see Table 3.23-58).

Figure 3.23-60
Tenakee Springs' Community Use Area

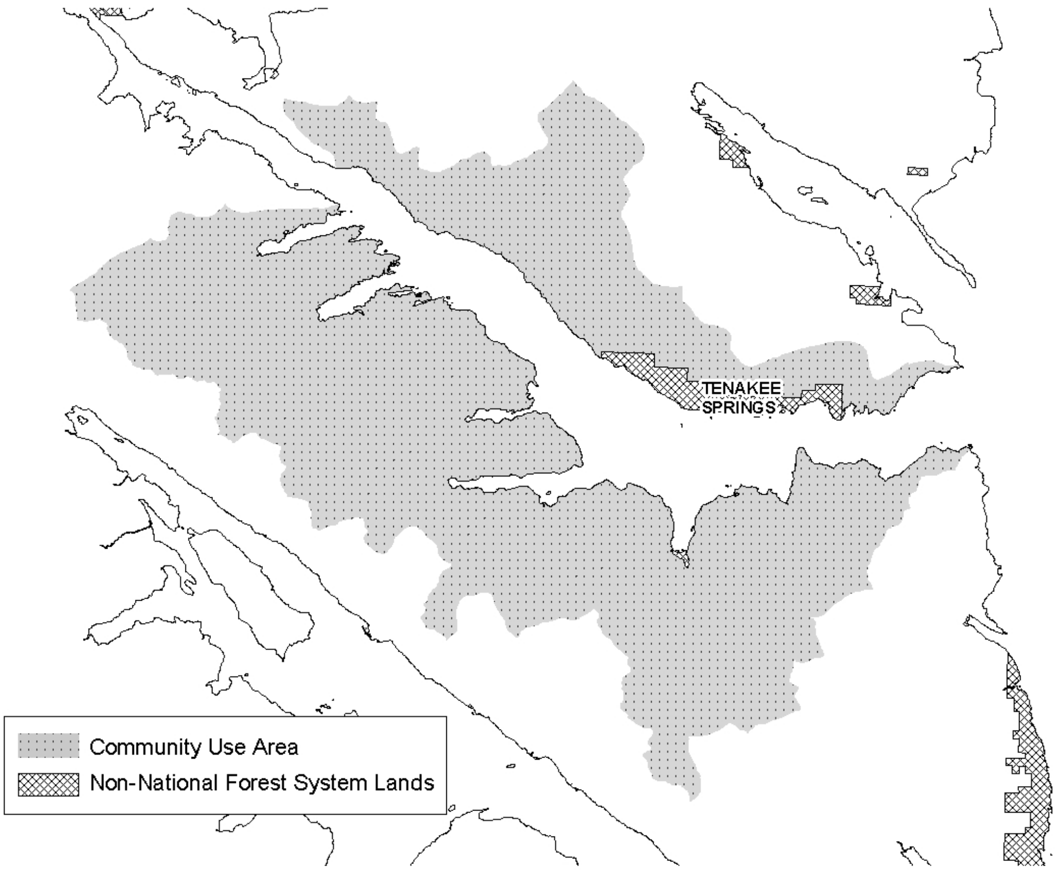


Table 3.23-58
Estimated Maximum Harvest (acres) over 100 Years in Tenakee Spring's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	2,488	6,072	3,754	2,808	5,062
Old Growth	2,092	938	1,106	1,282	1,447
Total	**4,581**	**7,010**	**4,860**	**4,090**	**6,509**
Harvest as a Percent of Total NFS Lands in the Community Use Area	2.3%	3.6%	2.5%	2.1%	3.3%

Economy

Tenakee Springs is primarily a commercial fishing, subsistence, and retirement community. Commercial fishing is not expected to be affected by any of the alternatives.

The Tenakee Springs/Indian River project is located on non-NFS lands and would not be directly affected by the Renewable Energy Plan Components identified in Chapter 5 of the proposed amended Forest Plan.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 55 percent of the total edible pounds of subsistence resources harvested by Tenakee Springs households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 53 percent of per capita subsistence harvest in Tenakee Springs in 1987 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 39 percent of the total edible pounds of subsistence resources harvested by Tenakee Springs households (Kruse and Frazier, 1988). Deer accounted for 41 percent of per capita subsistence harvest by Tenakee Springs residents in 1987 (ADF&G 2014).

The WAAs used by Tenakee Springs residents for hunting deer lie within GMU 4. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). Among Tenakee Springs residents, total annual deer harvest has fluctuated up and down over the past decade, and in 2013 was about 12 percent less (9 fewer deer) than in 2004 (ADF&G 2015b).

Tenakee Springs residents take the majority (71 percent) of their deer from six WAAs (Table 3.23-59). As shown in Table 3.23-59, the Tenakee Springs portion ranges from about 4 to 31 percent of total harvest and 8 to 90 percent of all rural deer

Table 3.23-59
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Tenakee Springs Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Tenakee Springs Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
3627	20	25	63	76%	72%	73%	74%	71%	71%
3526	15	28	63	80%	79%	80%	80%	78%	79%
3629	14	23	66	91%	91%	90%	91%	90%	91%
3525	5	56	118	75%	69%	71%	71%	70%	72%
3630	4	6	18	99%	99%	99%	99%	99%	99%
3628	2	2	8	98%	98%	98%	98%	98%	98%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

harvest in these WAAs. About 58 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

All of the WAAs identified in Table 3.23-59 are in areas with at least some past timber harvest and, therefore, deer habitat capabilities are currently estimated to be below 1954 levels (Table 3.23-59). Under each of the alternatives, additional harvest would occur that would reduce habitat capabilities in four of the six WAAs by a further 1 to 6 percent (Table 3.23-59).

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined all 1997 alternatives should be able to provide sufficient habitat capability over the short term and long term for deer hunted by Tenakee Springs residents and all rural hunters, and over the short term for all hunters. All of the 1997 alternatives included substantially higher levels of timber harvest in Tenakee Spring's community use area than the alternatives considered in this EIS (approximately 4 to 11 times as high). Therefore, it is likely all of the current alternatives would provide sufficient habitat in the short and long terms for deer hunted by Tenakee Spring's residents and all rural hunters. However, the 1997 analysis concluded that all alternatives may have future inadequate habitat capability for the total deer hunt and at some point a restriction in hunting may be necessary. This may still be the case under all current alternatives.

In summary, use of most subsistence resources by Tenakee Springs residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area.

Thorne Bay

Affected Environment

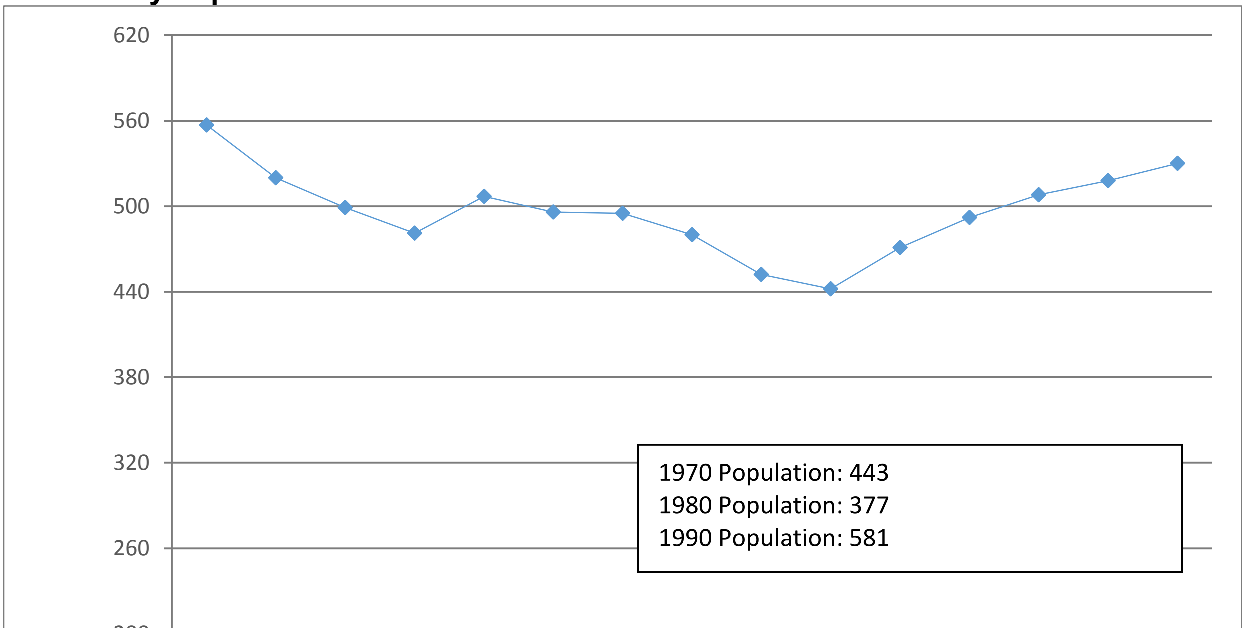
Overview and Demographic Characteristics

Thorne Bay is located at the head of Thorne Bay on eastern Prince of Wales Island, approximately 40 air miles northwest of Ketchikan. Petroglyphs and other archaeological remains indicate occupation and use of the area by Alaska Natives dating back at least 3,000 years. Post-contact development began in the early 1900s with construction of a saltery on the south shore of Thorne Bay.

Thorne Bay developed as a result of the long-term timber sale contract between the Forest Service and the Ketchikan Pulp Company. In 1960, a floating logging camp was built in Thorne Bay, and, in 1962, a shop, barge terminal, log sort yard, and camp were built to replace facilities at Hollis. During this era, Thorne Bay was considered the largest logging camp in North America. Thorne Bay was incorporated as a second-class city in 1982, making it one of Alaska's newest cities.

Thorne Bay's population decreased by 4 percent between 1990 and 2000, dropping by a further 21 percent between 2000 and 2009, but has since rebounded nearly to 2000 levels. Total estimated population was 530 in Thorne Bay in 2014 (Figure 3.23-61). Alaska Natives comprised 2 percent of the population in Thorne Bay in 2010 (Table 3.23-8). A total of 76 students were enrolled in Thorne Bay in 2014, down from 136 students in 2000 and 168 students in 1990 (Table 3.23-9).

Figure 3.23-61
Thorne Bay Population 1970 to 2014



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Thorne Bay	557	520	499	481	507	496	495	480	452	442	471	492	508	518	530

Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The Thorne Bay economy is primarily based on the timber industry and the USDA Forest Service management of the National Forest. Logging operations in the area are generally seasonal (March to November) and include a major log transfer site for Prince of Wales Island. The 2013 mill survey conducted for the USDA Forest Service identified four active timber processors in Thorne Bay: Porter Lumber Company, Thuja Plicata Lumber Company, Good Faith Lumber Company, and Western Gold Cedar Products. These mills had a combined installed production capacity of 22 MMBF and together processed approximately 2 MMBF in 2013 and employed about 12 people (Parrent and Grewe 2014). Northern Star Cedar Products and Thorne Bay Enterprises, also located in Thorne Bay, are currently idle (Parrent and Grewe 2014).

Commercial fishing, tourism, and government also provide employment (Himes-Cornell et al. 2013). In 2013, 17 residents held commercial fishing permits and grossed an estimated $523,000 (ACFEC 2015).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. An estimated 8 percent of the labor force in Thorne Bay was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $49,323, compared to the state median of $70,760; the corresponding median for the Prince of Wales-Hyder CA was $46,071 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	12	7
Construction	21	12
Manufacturing	5	3
Trade, Transportation and Utilities	37	21
Information	0	0
Financial Activities	5	3
Professional and Business Services	6	3
Educational and Health Services	13	7
Leisure and Hospitality	11	6
State Government	7	4
Local Government	62	34
Other	1	1
Unknown	0	0
Total Employment	**180**	**100**

Source: Alaska DOL 2015d

Thorne Bay is part of the AP&T system that connects the community with the communities of Coffman Cove, Craig, Hollis, Hydaburg, Kasaan, and Klawock. Electricity is diesel generated. Residential rates for 2011 before and after the application of PCE payments were 24 cents/kWh and 16 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 24 cents/kWh.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Thorne Bay in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-62. This area contains 1,000,251 acres of NFS land (among other land ownerships). Table 3.23-60 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. Total areas available for harvest range from about 10.0 percent of the Thorne Bay community use area under Alternative 1 to 13.1 percent under Alternative 2. Harvest activities could have localized effects if they coincide with a particular location favored by Thorne Bay residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-60).

Economy

Thorne Bay is primarily a logging community and as such would be directly affected by the amount of logging opportunities on north Prince of Wales Island, as well as elsewhere on the Tongass. Several small timber operators produce value-added products in and near Thorne Bay. These value added products include music wood, cabinets, and other products. These operators process relatively low volumes of timber, but require specific species and grades to meet their needs. All alternatives would supply old-growth volume (5 MMBF) to support the small operators in Southeast Alaska, including those located in and around Thorne Bay.

The lodges located near the community would not be affected under any of the alternatives.

Figure 3.23-62
Thorne Bay's Community Use Area

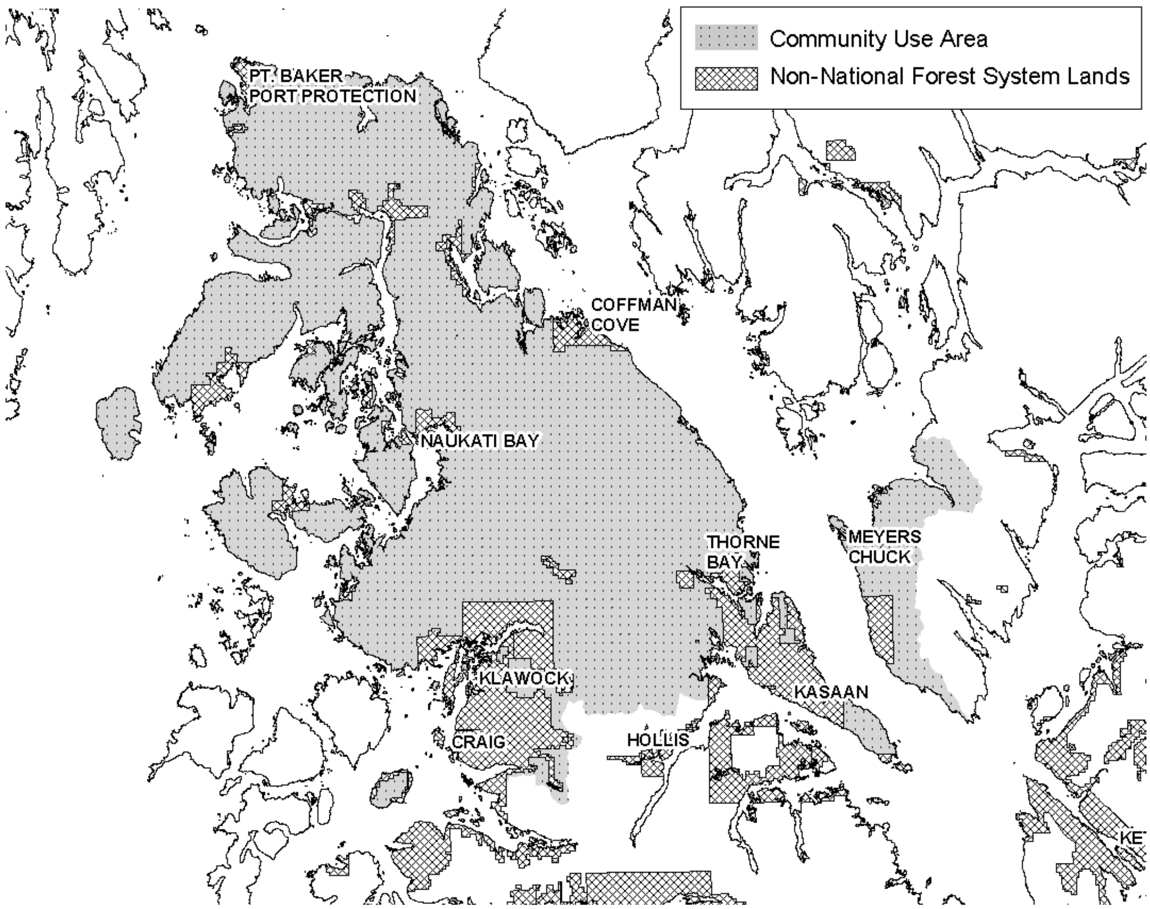


Table 3.23-60
Estimated Maximum Harvest (acres) over 100 Years in Thorne Bay's Community Use Area by Alternative

	Alternative				
	1	2	3	4	5
Young Growth	84,887	123,785	121,302	95,726	99,655
Old Growth	15,294	6,937	7,342	11,364	9,451
Total	**100,180**	**130,722**	**128,644**	**107,090**	**109,106**
Harvest as a Percent of Total NFS Lands in the Community Use Area	10.0%	13.1%	12.9%	10.7%	10.9%

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 75 percent of the total edible pounds of subsistence resources harvested by Thorne Bay households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 54 percent of per capita subsistence harvest in Thorne Bay in 1998 (ADF&G 2014).

The 1988 TRUCS study found that deer accounted for 20 percent of the total edible pounds of subsistence resources harvested by Thorne Bay (Kruse and Frazier 1988). Deer accounted for 27 percent of per capita subsistence harvest by Throne Bay residents in 1998 (ADF&G 2014).

Thorne Bay residents harvest deer almost entirely on Prince of Wales Island, which is included in GMU 2. Following a deer population decline 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Thorne B ay residents, total annual deer harvest has generally increased over the past decade, and in 2013 was about 40 percent higher (89 more deer) than in 2004 (ADF&G 2015b).

Residents of Thorne Bay harvest the majority (70 percent) of their deer from two WAAs in north-central Prince of Wales Island (1319 and 1315). As shown in Table 3.23-61, the Thorne Bay portion represents about 38 percent and 40 percent of the total harvest and about 59 percent and 53 percent of the rural hunter harvest in these WAAs, respectively. About 32 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a limited harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

WAAs 1319 and 1315 occur in an area with substantial past harvest and, therefore, deer habitat capabilities are currently estimated to be below 1954 levels (Table 3.23-61). Under each of the alternatives, additional harvest would occur that would reduce habitat capabilities after 100 years by a further 4 to 6 percent in WAA 1319 and 3 to 5 percent in WAA 1315 (Table 3.23-61).

Table 3.23-61
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Thorne Bay Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Thorne Bay Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1319	119	201	317	74%	68%	68%	70%	70%	70%
1315	90	169	226	56%	52%	52%	53%	53%	51%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all1997 alternatives except for the most timber intenstive (Alternatives 2, 7, and 9) should be able to provide sufficient habitat capability over the short and long term for deer hunted by Thorne Bay residents. All of the 1997 alternatives included substantially higher levels of timber harvest in Thorne Bay's community use area than the alternatives considered in this EIS (approximately 36 to 252 percent higher). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the long term for deer hunted by Thorne Bay residents. However, projected deer harvest in the Thorne

Bay community use area by all rural hunters and all hunters was estimated to exceed the level that the analysis is assumed would provide a reasonably high level of hunter success for their effort, in the short and long term. This may still be the case under all alternatives.

In summary, use of most subsistence resources by Thorne Bay residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rual hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within Thorne Bay's subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Whale Pass

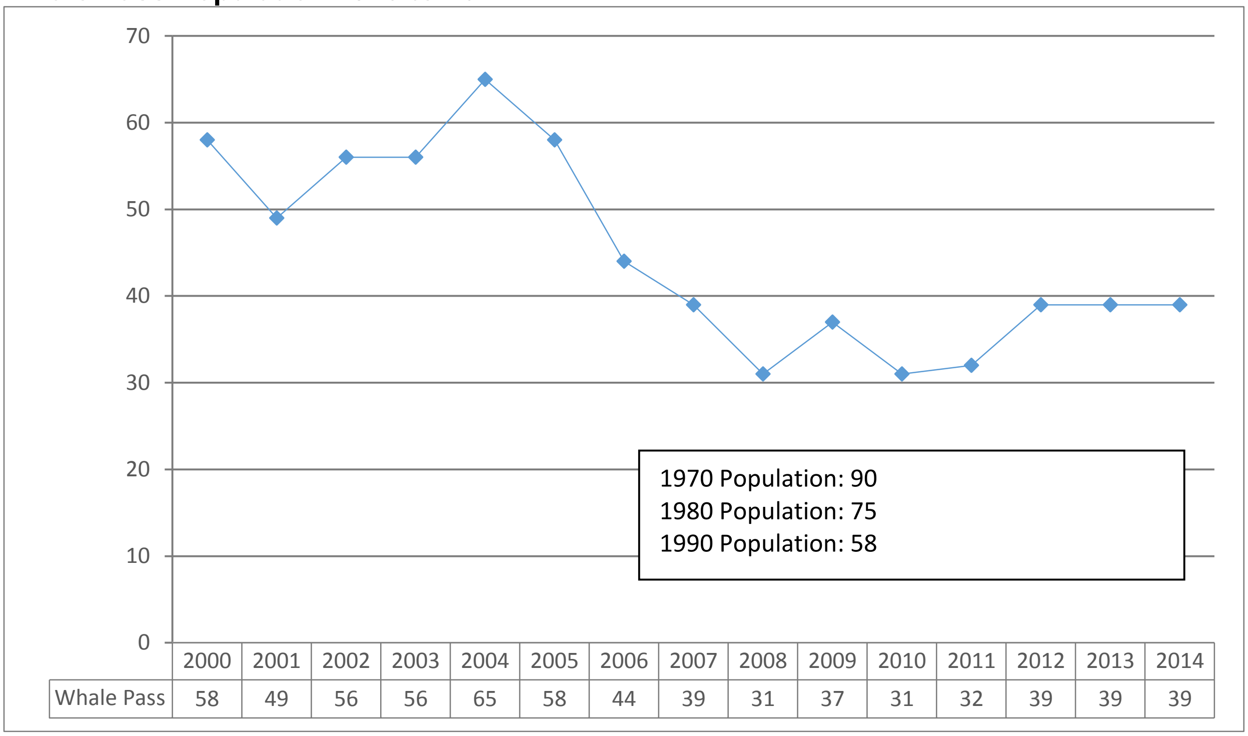
Affected Environment

Overview and Demographic Characteristics

Whale Pass is an unincorporated community located on the northeast coast of Prince of Wales Island. Whale Pass was originally established as a logging camp by Ketchikan Pulp Company in the early 1960s. According to local residents, a float camp housed loggers and their families in this location for almost 30 years. In 1982, the float camp was removed and many of the logging families left. Others moved to trailer pads on land at the head of the cove. That same year, Whale Pass became the site of a State land sale, which brought renewed population growth and the founding of a homeowners association. The community has been connected to the road system on Prince of Wales Island since 1981. A log transfer station remains on the southwest side of the bay (ADF&G 1994).

The population of Whale Pass dropped from 90 in 1970 to 58 in 2000, and has continued to generally trend downward since 2000, with a total estimated population of 39 in 2014 (Figure 3.23-63). According to the 2010 Census, there were no Alaska Native residents in Whale Pass (Table 3.23-8). Whale Pass school was closed in 2000 and 2010; 11 students were enrolled in the school in 2014 (Table 3.23-9).

Figure 3.23-63
Whale Pass Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

Whale Pass is primarily dependent on the timber industry, tourism, sport fishing and hunting, with logging operations and related services as the only steady employment opportunities (Himes-Cornell et al. 2013). Subsistence activities and public assistance payments supplement income (Himes-Cornell et al. 2013).

Most visitors arrive by car coming in through Craig or Ketchikan, with visitors to the one high-end ecolodge arriving by float plane included in the guest package (Dugan et al. 2009). Five visitor operations were in business in the summer of 2007, grossing an estimated $120,000 from about 275 guests (Dugan et al. 2009).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. According to the ACS, in 2013, the entire active labor force in Whale Pass (an estimated 16 residents) was unemployed and looking for work, and the remaining adult residents were unemployed and not looking for work (U.S. Census Bureau 2014b). These estimates conflict with the State data presented below (that are direct counts), which identify 25 people in Whale Pass as employed. The sampling limitations of the ACS for small communities can lead to a large margin of error; in this case, the estimate of 100 percent unemployment had a margin of error of 58 percent (U.S. Census Bureau 2014b). Median household income is not available for this community. State data indicate that 84 percent of resident workers' annual wages were $50,000 or less (Alaska DOL 2015d).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	4	16
Construction	4	16
Manufacturing	0	0
Trade, Transportation and Utilities	3	12
Information	0	0
Financial Activities	0	0
Professional and Business Services	0	0
Educational and Health Services	2	8
Leisure and Hospitality	5	20
State Government	3	12
Local Government	4	16
Other	0	0
Unknown	0	0
Total Employment	**25**	**100**

Source: Alaska DOL 2015d

Whale Pass has some of the highest electric rates in Alaska due to the use of diesel generated power. Residential rates for 2011 before and after the application of PCE payments were 60 cents/kWh and 26 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 60 cents/kWh. The high cost of energy is believed to currently impede economic development for commercial and industrial ventures (Alexander et al. 2010).

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Whale Pass in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-64. This area contains 1,000,251 acres of NFS land (among other land ownerships). Table 3.23-62 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. Total areas available for harvest range from about 10.0 percent of the Whale Pass community use area under Alternative 1 to 13.1 percent under Alternative 2. Harvest activities could have localized effects if they coincide with a particular location favored by Whale Pass residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old-growth harvest in this area (see Table 3.23-62).

Figure 3.23-64
Whale Pass' Community Use Area

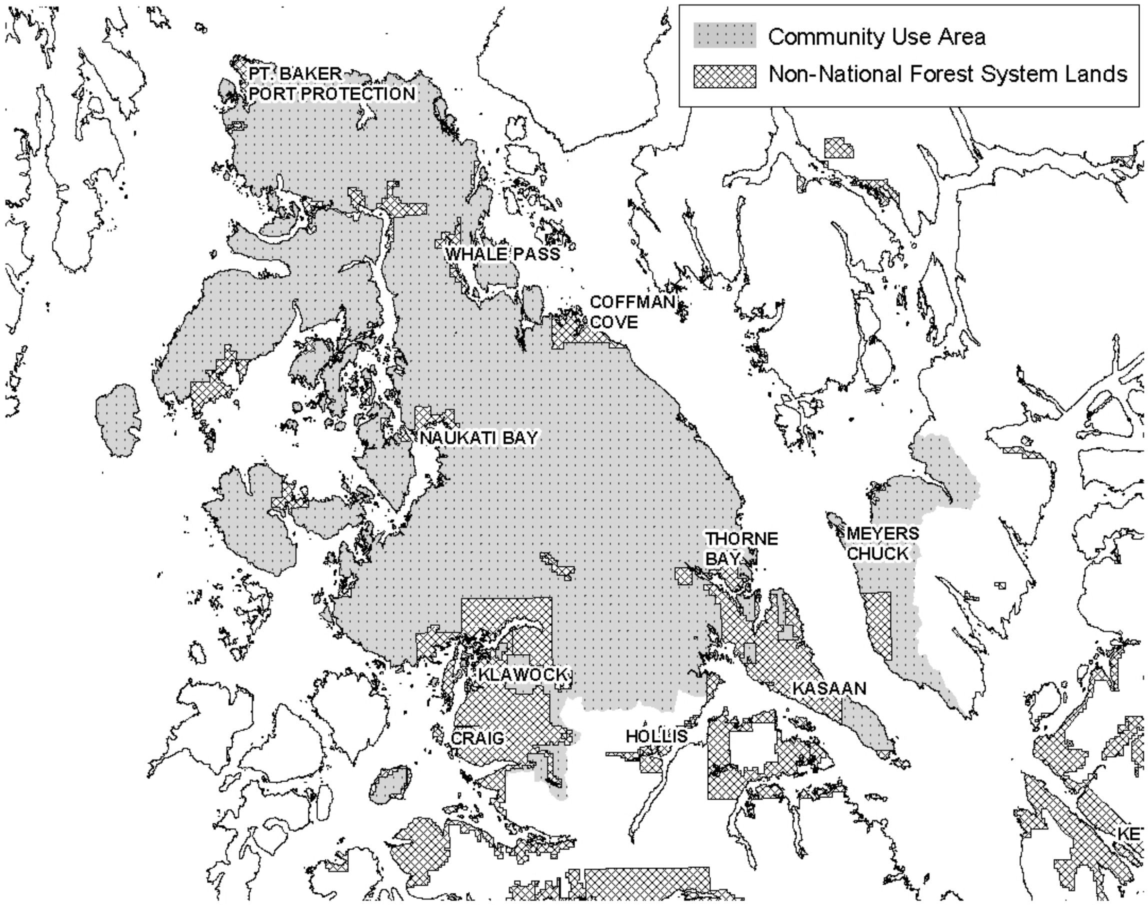


Table 3.23-62
Estimated Maximum Harvest (acres) over 100 Years in Wale Pass' Community Use Area by Alternative

	Alternative				
	1	2	3	4	5
Young Growth	84,887	123,785	121,302	95,726	99,655
Old Growth	15,294	6,937	7,342	11,364	9,451
Total	**100,180**	**130,722**	**128,644**	**107,090**	**109,106**
Harvest as a Percent of Total NFS Lands in the Community Use Area	10.0%	13.1%	12.9%	10.7%	10.9%

Economy

Residents of Whale Pass could be potentially affected by changes in timber harvest, karst protection, recreation and tourism, and subsistence opportunities. Members of several speliological societies derive a portion of their income from cave and karst analysis and exploration in the vicinity. The Whale Pass Resort and a retail store are located in Whale Pass.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 60 percent of the total edible pounds of subsistence resources harvested by Whale Pass households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 61 percent of per capita subsistence harvest in Whale Pass in 2012 (ADF&G 2014).

The 1988 TRUCS study found that deer account for 27 percent of the total edible pounds of subsistence resources harvested by Whale Pass households (Kruse and Frazier, 1988). Deer accounted for 29 percent of per capita subsistence harvest by Whale Pass residents in 2012 (ADF&G 2014).

The majority of deer harvest by Whale Pass residents occurs on Prince of Wales Island, which is included in GMU 2. Following a deer population decline 2006 to 2009 due to severe winters, the population is now considered stable to increasing, with above-average deer harvest in this GMU (Harper 2013). Among Whale Pass residents, total annual deer harvest is generally low and in 2013 was about 10 percent higher (3 more deer) than in 2004 (ADF&G 2015b).

Residents of Whale Pass harvest the majority (72 percent) of their deer from two WAAs in north Prince of Wales Island (1530 and 1527). As shown in Table 3.23-63, the Whale Pass portion represents about 15 percent and 11 percent of the total harvest and about 32 percent and 18 percent of the rural hunter harvest in these WAAs, respectively. About 51 percent of the combined harvest in these WAAs is by non-rural hunters, suggesting that there is a harvest buffer that could be restricted, if necessary, before restrictions are placed on rural harvests.

WAAs 1530 and 1527 occur in an area with substantial past timber harvest and, therefore, deer habitat capabilities are currently estimated to be below 1954 levels (Table 3.23-63). Under each of the alternatives, additional harvest would occur that would reduce habitat capabilities after 100 years by a further 2 to 4 percent WAA 1530 and 1 to 4 percent in WAA 1529.

Table 3.23-63
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Whale Pass Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Whale Pass Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1530	18	57	124	61%	58%	61%	59%	58%	57%
1527	3	17	27	72%	68%	71%	71%	69%	69%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined all 1997 alternatives should be able to provide sufficient habitat capability over the short and long term for deer hunted by Whale Pass residents. All of the 1997 alternatives included substantially higher levels of timber harvest in Whale Pass' community use area than the alternatives considered in this EIS (approximately 36 to 252 percent higher). Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the short and long term for deer hunted by Whale Pass residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to produce deer populations sufficient to avoid effects on hunter success for all rural hunters and all hunters in both the short and long terms. This may still be the case under all current alternatives.

In summary, use of most subsistence resources by Whale Pass residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area. Indirect effects associated with increased competition for deer within the Whale Pass subsistence use areas could also occur under all alternatives if hunters from other communities were displaced due to timber harvest activity.

Wrangell

Affected Environment

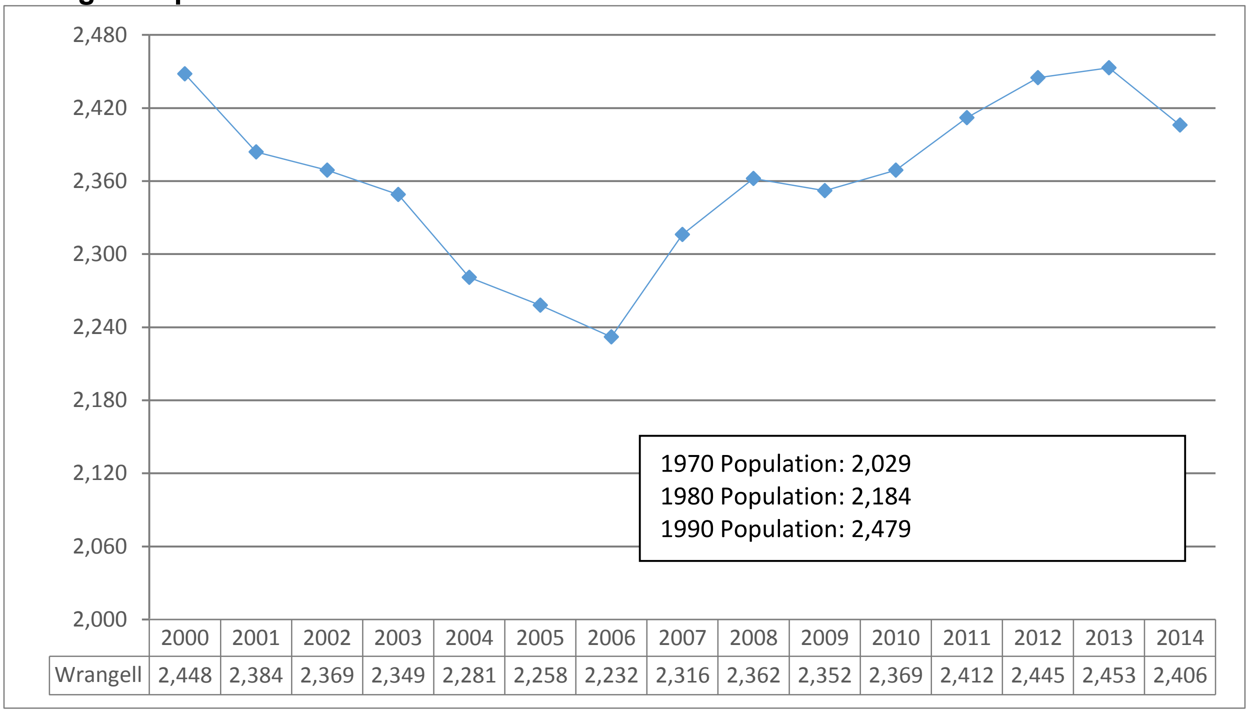
Overview and Demographic Characteristics

Wrangell is located on the north end of Wrangell Island, near the mouth of the Stikine River, an historic trade route to the Canadian interior. Wrangell began as an important Tlingit site primarily because of its proximity to the Stikine River. Wrangell clans held a monopoly of trading rights along the Stikine. In 1811, the Russians began fur trading with area Tlingits and built a stockade named Redoubt Saint Dionysius in 1834. In 1867, a military post named Fort Wrangell was established as part of the Alaska Territory. The community continued to grow because of its strategic location as a military fur trading center, and as an outfitter for gold prospectors between 1861 and the 1930s (ADF&G 1994; Alaska DCED 2006).

In 2008, residents decided by local election that the City of Wrangell should dissolve and incorporate as the City and Borough of Wrangell. This added the communities of Meyers Chuck, Union Bay, Thoms Place, Olive Cove, and Farm Island to the new unified city and borough. The community has an active local Fish and Game Advisory Committee focused on commercial, sport, and personal use fishing, hunting, and subsistence (ADF&G 2015a).

Wrangell's population increased between 1970 and 2000, with a total of 2,448 residents identified in 2000 (Figure 3.23-65). Population has fluctuated since 2000, reaching its lowest level in 2006, with an estimated 2,232 residents. Total estimated population was 2,406 in Wrangell in 2014 (Figure 3.23-65). Alaska Natives comprised 16 percent of the population in Wrangell in 2010 (Table 3.23-8). School enrollment in Wrangell has decreased at a much higher rate than population, with enrollment decreasing from 491 students in 2000 to 275 students in 2014, a drop of 44 percent (Table 3.23-8).

Figure 3.23-65
Wrangell Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The Wrangell economy is primarily based on commercial fishing, fish processing, the timber industry, and tourism (Himes-Cornell et al. 2013). In 2013, 205 residents held commercial fishing permits and estimated gross fishing earnings of local residents exceeded $14 million (ACFEC 2015). A dive fishery, including for urchins, sea cucumbers, and geoducks, is developing. Tourism provides a significant source of income and employment; in 2009, Wrangell attracted 23,000 independent travelers, 4,400 small cruise ship passengers, and 470 pleasure vessel calls (Himes-Cornell et al. 2013).

The Alaska Pulp Corporation mill and subsequent Silver Bay Logging mill are both closed. In 2010, very little timber related employment existed (Himes-Cornell et al. 2013). No timber-related employment was identified in Wrangell in 2012 (see the Subregional Overview discussion of employment, above).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. An estimated 8 percent of the labor force in Wrangell was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $45,841, compared to the state median of $70,760 (Tables 3.23-4 and 3.23-8).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	29	3
Construction	67	8
Manufacturing	50	6
Trade, Transportation and Utilities	145	17
Information	7	1

Employment by Industry in 2013	Number	Percent of Total
Financial Activities	23	3
Professional and Business Services	18	2
Educational and Health Services	106	12
Leisure and Hospitality	61	7
State Government	54	6
Local Government	273	32
Other	24	3
Unknown	0	0
Total Employment	**857**	**100**
Source: Alaska DOL 2015d		

Wrangell is served by the SEAPA system that connects Ketchikan, Petersburg, and Wrangell. The Swan Lake and Tyee Lake hydroelectric projects provide electricity to this SEAPA network (Table 3.12b-2). Residential rates for 2011 before and after the application of PCE payments were both 11 cents/kWh (see Table 3 in the Energy Resource Report [Tetra Tech 2015]).

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Wrangell in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-66. This area contains 819,240 acres of NFS land (among other land ownerships). Table 3.23-64 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Wrangell, ranging from about 2.7 percent (Alternative 1) to 3.6 percent (Alternative 3). Harvest activities could have localized effects if they coincide with a particular location favored by Wrangell residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternatives 2 and 3; however, it may be noted that Alternative 1 (which would have the least amount of potential suitable harvest) would have the largest potential old growth harvest in this area (see Table 3.23-64).

Economy

Commercial fishing, recreation and tourism, and subsistence opportunities are particularly important to Wrangell. Wrangell is one of the stop-over points for visitors traveling to the Stikine River and the Stikine-LeConte Wilderness. Commercial fisheries employment and recreation and tourism activities are not likely to be affected under any of the alternatives.

Figure 3.23-66
Wrangell's Community Use Area

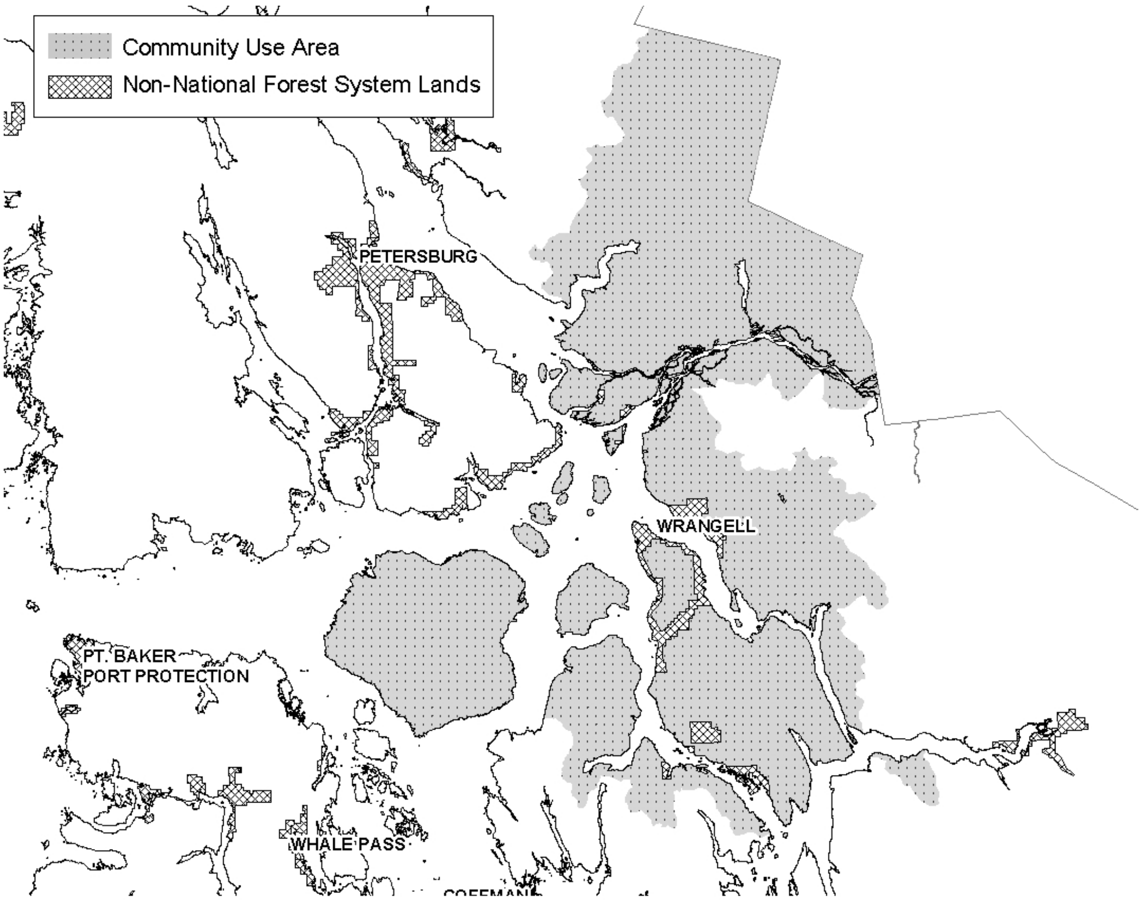


Table 3.23-64
Estimated Maximum Harvest (acres) over 100 Years in Wrangell's Community Use Area by Alternative

	Alternative				
	1	**2**	**3**	**4**	**5**
Young Growth	16,285	25,657	25,859	19,968	20,454
Old Growth	5,528	2,881	3,566	4,469	3,824
Total	**21,814**	**28,539**	**29,425**	**24,436**	**24,278**
Harvest as a Percent of Total NFS Lands in the Community Use Area	2.7%	3.5%	3.6%	3.0%	3.0%

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 52 percent of the total edible pounds of subsistence resources harvested by Wrangell households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 71 percent of per capita subsistence harvest in Wrangell in 2000 (ADF&G 2014).

The 1988 study found that deer account for 21 percent of the total edible pounds of subsistence resources harvested by Wrangell households (Kruse and Frazier 1988). Deer accounted for 17 percent of per capita subsistence harvest by Wrangell residents in 2000 (ADF&G 2014).

Wrangell residents mainly harvest deer on Wrangell, Zarembo Island, and other surrounding islands, with the majority of harvest occurring in GMU 3. Deer harvest in GMU 3 has historically fluctuated. Between 1994 and 2011, deer harvest ranged from a low of 333 to a high of 1,119 (Harper 2013). The harvest level in 2013 was about 100 deer below the previous 10 year mean (Harper 2013). From 2004 to 2013, deer harvest by Wrangell residents fluctuated, ranging from 370 to 506 deer, with similar numbers harvested in 2004 and 2013 (ADF&G 2015b).

Deer harvest by Wrangell residents is spread over many WAAs, but the majority (76 percent) of their deer are from six WAAs located on Wrangell and surrounding islands. Zarembo Island (WAA 1905) alone accounted for 39 percent of the annual average deer harvest by Wrangell residents from 2004 to 2013. The Wrangell portion of the harvest in these six WAAs represents about 76 percent of the total harvest and about 85 percent of the rural hunter harvest (Table 3.23-65).

The majority of the WAAs used heavily by Wrangell residents are in areas with substantial past harvest and deer habitat capabilities are currently estimated to be considerably below 1954 levels (Table 3.23-65). Under each of the alternatives, additional harvest would further reduce habitat capabilities after 100 years by 1 to 6 percent (Table 3.23-65).

Table 3.23-65
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Wrangell Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	Wrangell Residents	All Rural Hunters[2]	All Hunters	2014	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
1905	170	190	204	73%	67%	70%	69%	67%	67%
1903	67	69	72	84%	81%	82%	82%	82%	83%
1901	53	56	62	90%	88%	88%	88%	88%	88%
1003	15	28	44	59%	54%	58%	56%	54%	54%
1528	12	30	36	78%	77%	78%	78%	78%	78%
1904	12	12	14	66%	66%	65%	65%	65%	66%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives except for Alternative 7 and 9 should be able to provide sufficient habitat capability over the long term for deer hunted by Wrangell residents. All of the 1997 alternatives included substantially higher levels of timber harvest in Wrangell's community use area than the alternatives considered in this EIS (approximately 2 to 6 times as high).

Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the long term for deer hunted by Wrangell residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to produce deer populations sufficient to avoid effects on hunter success for all hunters in the long term. This may still be the case under all current alternatives.

In summary, use of most subsistence resources by Wrangell residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction on hunting might be necessary over the long term, especially for all hunters, under all alternatives. The risk of hunting restrictions would be reduced somewhat through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area.

Yakutat

Affected Environment

Overview and Demographic Characteristics

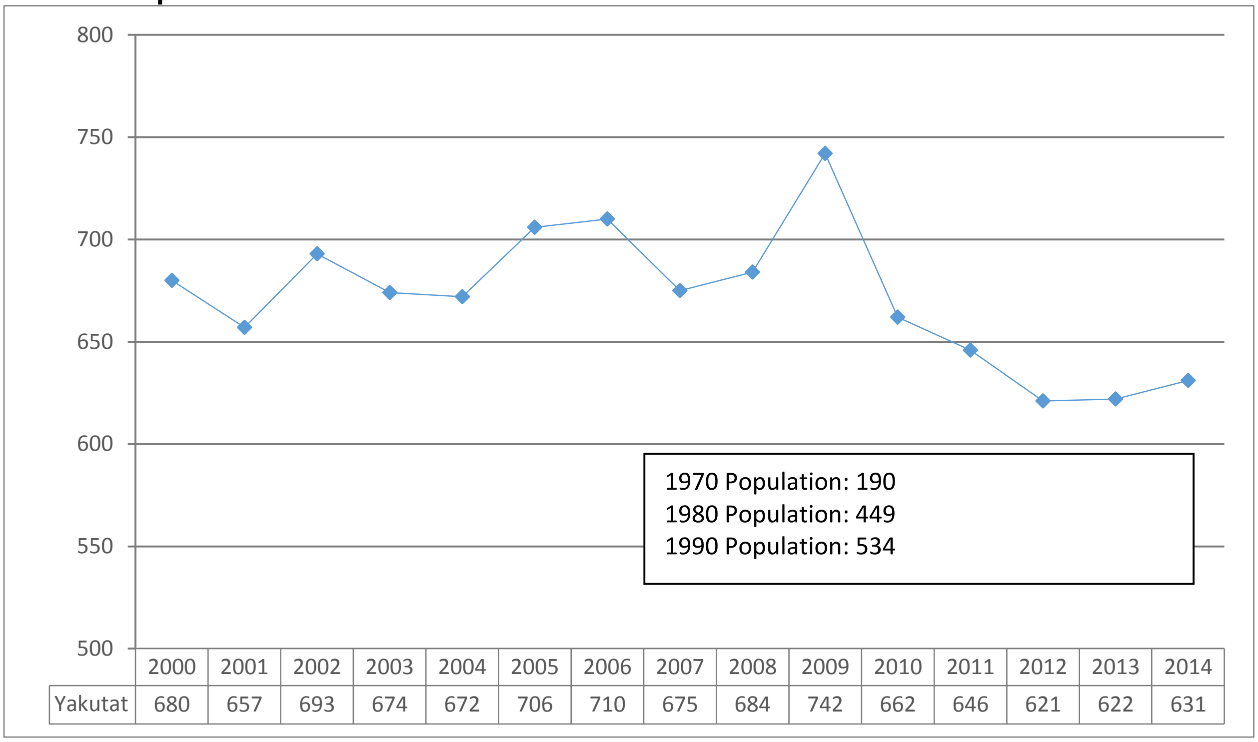
Yakutat is located in the lowlands along the northern Gulf of Alaska, 212 miles northwest of Juneau at the mouth of Yakutat Bay. Yakutat, which means “the place where the canoes rest,” has a diverse cultural history. The original settlers, believed to have been Eyak people from the Copper River area, were later conquered by the Tlingits. Intensive contact with European explorers came in the late 1700s when a Russian fur trading company moved into the Yakutat area. By the mid-1800s, foreign traders were well established along the coast. The contemporary town grew up around “the old village,” which was established in 1889 by missionaries (ADF&G 1994).

Incorporated as a first-class city in 1948, Yakutat is governed by a mayor and a city council. Yakutat Borough, incorporated in 1992, expanded the original city boundaries to include a large section of the Gulf Coast north of Cape Fairweather. Yakutat has an active local Fish and Game Advisory Committee (ADF&G 2015a). Yakutat is accessible by jet service from Juneau and Anchorage. Wrangell-Saint Elias National Park, Russell Fiords Wilderness, and Glacier Bay National Park are located northwest, northeast, and southeast of Yakutat, respectively.

The population of Yakutat increased almost threefold between 1970 and 1990, and increased by an additional 27 percent between 1990 and 2000 (Figure 3.23-67). Population in Yakutat has fluctuated since 2000, with 49 fewer residents in 2014 than in 2000. Total estimated population was 631 in Yakutat in 2014 (Alaska DOL 2015b). Alaska Natives comprised 36 percent of the population in Yakutat in 2010 (Table 3.23-8).

Enrollment in Yakutat schools has also declined since 2000, dropping from 167 in 2000 to 109 in 2014, a 35 percent decrease, compared to an overall declinein population of 7 percent (Table 3.23-9; Figure 3.23-67).

Figure 3.23-67
Yakutat Population 1970 to 2014



Sources: Alaska DOL 2015b; USDA Forest Service 1997a

Economic Conditions

The Yakutat economy is primarily dependent on fishing, fish processing, and government (Himes-Cornell et al. 2013). In 2013, a total of 158 residents held commercial fishing permits, with estimated gross earnings of approximately $5.4 million (ACFEC 2015). Fishing opportunities in the area, both freshwater in the Situk River and saltwater, are considered world class. Most residents depend on subsistence hunting and fishing (Himes-Cornell et al. 2013). Employment remains largely seasonal; in 2008 the number of jobs almost doubled in the summer (Himes-Cornell et al. 2013).

In addition to fish-related industries and government, tourism is important to Yakutat. As of 2010, there were 41 businesses within the area providing lodging of some type, including 27 located directly in Yakutat. Tourists come for rafting trips, sport fishing, surfing, and cruise trips (Himes-Cornell et al. 2013).

Employment by industry data compiled by the Alaska Department of Labor and Workforce Development are summarized in the table below. An estimated 7 percent of the labor force in Yakutat was unemployed and seeking work in 2013, compared to 6 percent for Southeast Alaska as a whole (U.S. Census Bureau 2014b; Alaska DOL 2015d). Median household income was $72,500, compared to the state median of $70,760 (Tables 3.23-4 and 3.23-8).(U.S. Census Bureau 2014b).

Employment by Industry in 2013	Number	Percent of Total
Natural Resources and Mining	2	1
Construction	12	4
Manufacturing	14	5

Employment by Industry in 2013	Number	Percent of Total
Trade, Transportation and Utilities	48	16
Information	2	1
Financial Activities	9	3
Professional and Business Services	13	4
Educational and Health Services	8	3
Leisure and Hospitality	33	11
State Government	21	7
Local Government	141	46
Other	1	< 1
Unknown	0	0
Total Employment	**304**	**100**

Source: Alaska DOL 2015d

Yakutat has some of the highest electric rates in Alaska due to the use of diesel generated power. Residential rates for 2011 before and after the application of PCE payments were 50 cents/kWh and 17 cents/kWh, respectively (see Table 3 in the Energy Resource Report [Tetra Tech 2015]). Commercial and other rates were 50 cents/kWh. Resolute Marine Energy has proposed a wave energy project that could make Yakutat one of the first municipalities in North America to generate electrical grid power from wave energy (Table 3.12b-3). The Yakutat Wave project would have a capacity of 500 to 750 kW.

Potential Effects

Community Use Area

The general area commonly used or related to by many of the residents of Yakutat in their local day-to-day work, recreational, and subsistence activities is shown on Figure 3.23-68. This area contains 250,271 acres of NFS land (among other land ownerships). Table 3.23-66 shows the estimated maximum acres of young-growth and old-growth harvest by alternative. In general, potential harvest levels represent a small portion of the community use area for Yakutat, ranging from about less than 0.1 percent (Alternative 4) to 1.4 percent (Alternatives 1 and 2). Harvest activities could have localized effects if they coincide with a particular location favored by Yakutat residents, and project-level impacts would be subject to future analysis under NEPA. In general, the potential for impacts would be higher under those alternatives with more lands identified as suitable for timber production within the community use area, as would be the case with Alternative 1.

Economy

Commercial fishing and subsistence are important to Yakutat. The Yakutat Forelands are some of the community’s most important subsistence use areas. Commercial fishing is not expected to be affected under any of the alternatives.

The proposed Yakutat Wave Project is located in a Scenic Viewshed LUD. Scenic Viewshed is considered a TUS “window” under the 2008 Forest Plan, an area potentially available for the location of transportation or utility corridors and sites. This classification and the standards and guidelines in the 2008 Forest Plan would continue to apply under Alternative 1. Under Alternatives 2 through 5, energy projects would be managed under the Renewable Energy Plan Components identified in Chapter 5 of the proposed Forest Plan amendment.

Subsistence

No significant effect on salmon, other finfish, or invertebrate habitat capability is expected from implementation of any alternative. These resources account for 82 percent of the total edible pounds of subsistence resources harvested by Yakutat households (Kruse and Frazier 1988). Marine resources (fish and marine invertebrates) accounted for 74 percent of per capita subsistence harvest in Yakutat in 2000 (ADF&G 2014).

Moose are more important than deer as a subsistence meat source for Yakutat residents. Moose availability would not be significantly affected under any of the alternatives.

The 1988 TRUCS study found that deer account for only a small fraction of the total edible pounds of subsistence resources harvested by Yakutat households (Kruse and Frazier, 1988). Deer accounted for 1 percent of per capita subsistence harvest by Yakutat residents in 2000 (ADF&G 2014).

Figure 3.23-68
Yakutat's Community Use Area

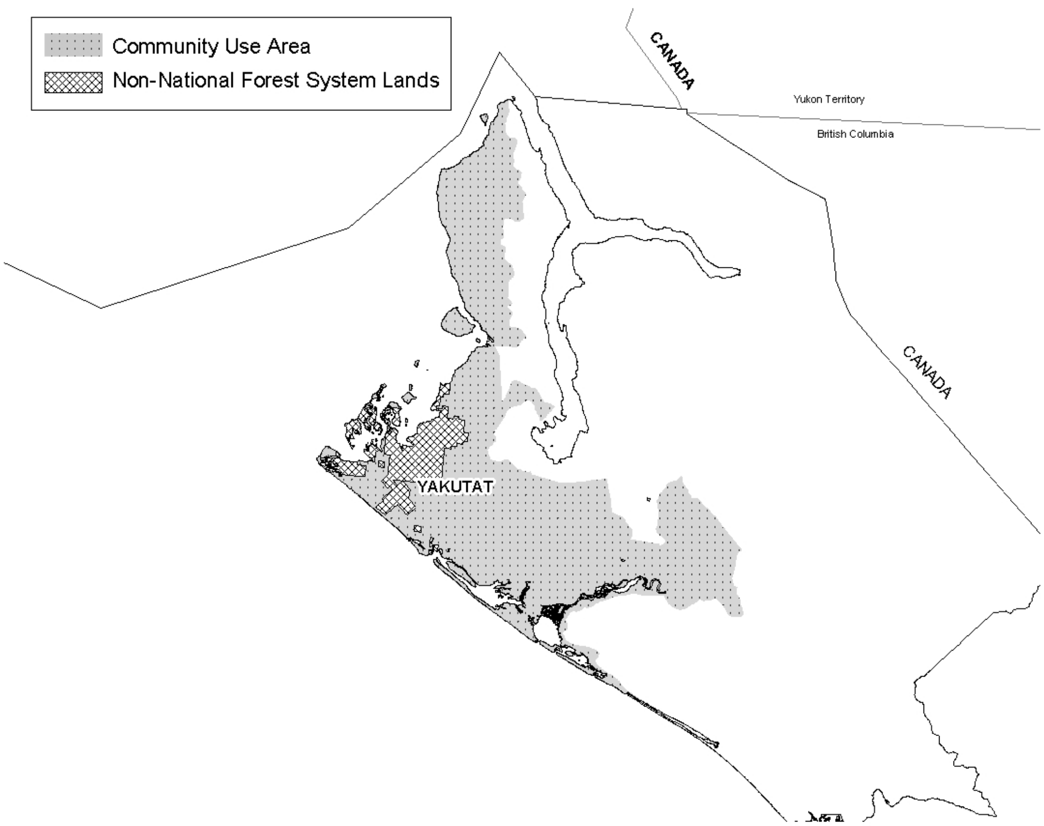


Table 3.23-66
Estimated Maximum Harvest (acres) over 100 Years in Yakutat's Community Use Area by Alternative

	Alternative				
	1	2	3	4	5
Young Growth	2,333	2,921	2,950	16	2,348
Old Growth	1,188	533	0	0	822
Total	**3,521**	**3,454**	**2,950**	**16**	**3,169**
Harvest as a Percent of Total NFS Lands in the Community Use Area	1.4%	1.4%	1.2%	< 0.0%	1.3%

Yakutat residents harvested an annual average of 36 deer from 2004 to 2013, with four WAAs accounting for 76 percent of this annual average (Table 3.23-67). These WAAs are located in GMU 4 and GMU 5A. GMU 4 is considered to provide a substantial portion of the deer hunting opportunity in Southeast Alaska (Harper 2013). Severe winter weather in 2006 and moderately severe winters the following two winters led to a dramatic decline in the deer populations throughout Southeast Alaska (Harper 2013). The deer population has rebounded in recent years, leading to an increase in successful hunters in this GMU (Harper 2013). In 1991, the Board of Game instituted a limited hunt in Unit 5A, with a one month bucks only season. Deer populations remain low in the Yakutat area, but are believed to be much more abundant than ever before and to have expanded their range inland (Harper 2013). Annual average deer harvest by Yakutat residents fluctuated from 2004 to 2013, but was substantially higher in 2013 than 10 years earlier (61 deer versus 33 deer) (ADF&G 2015b).

Table 3.23-67
Deer Harvest (2004 to 2013) and Deer Habitat Capability on NFS Lands in 2014 and After 100 Years of Full Implementation under Each Alternative, Expressed as a Percent of 1954 Habitat Capability, for the WAAs where Yakutat Residents Obtain Approximately 75% of their Average Annual Deer Harvest[1]

	Average Deer Harvest from 2004 to 2013			Deer Habitat Capability in 2014 and after 100 Years of Full Implementation Under Each Alternative, Expressed as a Percent of the 1954 Habitat Capability					
WAA	**Yakutat Residents**	**All Rural Hunters[2]**	**All Hunters**	**2014**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 5**
4504	15	15	17	100%	100%	100%	100%	100%	100%
4508	7	7	7	94%	84%	84%	94%	94%	94%
3315	3	38	46	84%	83%	83%	83%	82%	82%
3835	3	5	141	100%	100%	100%	100%	100%	100%

[1] Calculated based on harvest where location is known.
[2] The category "All Rural Hunters" includes residents of Southeast Alaska communities, excluding the cities of Juneau and Ketchikan.

The Deer Availability and Anticipated Demand analysis completed for the 1997 Forest Plan EIS determined that all 1997 alternatives should be able to provide sufficient habitat capability for deer hunted by Yakutat residents in the short term and long term. All of the 1997 alternatives included substantially higher levels of timber harvest in Yakutat's community use area than the alternatives considered in this EIS. Therefore, it is likely all of the current alternatives would provide sufficient habitat capability over the short and long term for deer hunted by Yakutat residents. However, the 1997 analysis concluded that demand would exceed the capability of the habitat to support deer populations sufficient to avoid effects on hunter success for all hunters in the long term. This may still be the case under all current alternatives.

In summary, use of most subsistence resources by Yakutat residents (fish and marine invertebrates) is not expected to be affected by any of the alternatives. However, subsistence use of deer may be affected to the point that some restriction in hunting might be necessary over the long term, especially for non-rural hunters, under all alternatives. With the exception of WAA 4252, the highest use areas for Yakutat households are within Wilderness and LUD II designations that will not change by alternative. The risk of hunting restrictions would be reduced somewhat, through more intensive management (e.g., thinning) of the existing and future closed-canopy, young-growth forests in this area.

Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to make the achievement of environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The Order further stipulates that the agencies conduct their programs and activities in a manner that does not have the effect of excluding persons from participating in, denying persons the benefits of, or subjecting persons to discrimination under such programs, policies, and activities because of their race, color, or national origin.

Race and ethnicity are shown by borough in Table 3.23-68. These data show that 65 percent of the population of Southeast Alaska identified as White in the 2010 census. American Indian and Alaska Native was the largest minority group, accounting for 16 percent of the total Southeast Alaska population. Table 3.23-68 indicates that there are relatively large proportions of Alaska Natives in Hoonah-Angoon, Yakutat, and Prince of Wales-Hyder. The populations of Haines, Juneau, and Skagway in contrast, have relatively low proportions of Alaska Natives, below the Southeast Alaska average of 16 percent.

Table 3.23-68
Race/Ethnicity by Borough/Census Area, 2010

		Percent of Total Population				
Geographic Area	**Total Population**	**White[1]**	**American Indian and Alaska Native[1]**	**Hispanic or Latino**	**Other Race[1,2]**	**Two or More Races[1]**
Northern Boroughs						
Haines Borough	2,508	82	9	2	1	5
Hoonah-Angoon CA	2,150	46	40	4	1	10
City and Borough of Juneau	31,275	67	11	5	8	9
City and Borough of Sitka	8,881	64	16	5	7	9
Municipality of Skagway Borough	968	90	4	2	1	4
City and Borough of Yakutat	662	40	35	3	6	15
Southern Boroughs						
Ketchikan Gateway Borough	13,477	66	14	4	8	8
Petersburg CA	3,815	69	16	3	3	8
Prince of Wales-Hyder CA	5,559	50	39	2	1	8
City and Borough of Wrangell	2,369	72	16	2	2	9
Southeast Alaska	**71,664**	**65**	**16**	**4**	**6**	**8**
Alaska	710,231	64	14	6	10	6

CA – Census Area
[1] Non-Hispanic only. The Federal Government considers race and Hispanic/Latino origin (ethnicity) to be two separate and distinct concepts. People identifying as Hispanic or Latino origin may be of any race. In this table people identifying as Hispanic or Latino are included in the Other Race category only.
[2] The "Other Race" category presented here includes census respondents identified as Black or African American, Asian, Native Hawaiian and Other Pacific Islander, or Some Other Race.
Source: Alaska DOL 2015g

Alaska Native populations are identified as a percentage of total population by community in Table 3.23-8. This information is presented graphically in Figure 3.17-1 (in the *Subsistence* section). These data indicate that 14 of Southeast Alaska's 32 communities have Alaska Native populations that comprise a larger share of total population than the regional average (16 percent). Alaska natives comprised a particularly large share of total population in Angoon (76 percent), Hoonah (53 percent), Hydaburg (85 percent), Kake (67 percent), Klawock (51 percent), Metlakatla (77 percent), and Saxman (51 percent), all considered traditional Native communities.

Median household income and the percent of households below the poverty line is presented by borough in Table 3.23-6. The percent of people below the poverty line in Alaska as a whole was 10.1 percent in 2013. Median household income was approximately $70,760. Juneau is the only borough in the region with median household income above the state median. Median household income as a share of the state median in the other boroughs ranged from 60.3 percent in Hoonah-Angoon to 94.3 percent in Sitka (Table 3.23-6). The share of the population below the poverty level in the northern boroughs in 2013 ranged from 4.2 percent in Skagway to 19.2 percent in Hoonah-Angoon compared to the statewide average of 10.1 percent (Table 3.23-6).

The percent of households below the poverty line and the median household income in 2013 are identified by community in Table 3.23-8. The U.S. Census identified 20 communities in Southeast Alaska with 10 percent or more of their population below the poverty line. All but four of the communities identified in Table 3.23-8 had median household incomes below the state average.

The potential effects of the alternatives on the economic and social environment of Southeast Alaska are discussed in the *Regional and National Economy* section of this document. The principal regional effects would be those associated with changes in the timber industry and recreation and tourism. There could also be potential effects upon subsistence use and heritage resources that have particular significance for Alaska Native populations.

The effects of the alternatives on communities are discussed by community in the preceding part of this section. These community assessments include a discussion of the potential effects to the subsistence resources and the land base used by each community. Overall effects on heritage resources are expected to be low under all the alternatives because of the protection offered by Forest-wide standards and guidelines. Further, the potential effects of the alternatives upon heritage resources are expected to be the lower than under the 2008 Forest Plan because of the lower allowable amount of potential timber harvest.

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CHAPTER 4
LIST OF PREPARERS

List of Preparers

Provided below are brief bio-sketches of the primary preparers and contributors from the Forest Service and Tetra Tech. Additional Forest Service, Tetra Tech, and other agency staff, who contributed to various sections through an extensive internal review process, or in other ways, are also listed.

Susan Howle, Project Manager and Plan Amendment Team Leader – Forest Service

Education

M.S., Geography, University of Massachusetts, 1998

B.S., Geography, Middle Tennessee State University, 1988

Experience

Twelve years of Forest Service experience in land and resource management planning, NEPA compliance, interdisciplinary team leadership, and project management in Regions 1, 3, 4, 5, 9 and 10, and the Washington Office

Five years of Bureau of Land Management experience in land use planning, NEPA compliance, wildland fire, partnerships, special initiatives coordination, and fuels program management in Nevada

Rick Abt, Operations and Planning Staff Officer – Forest Service

Education

B.S., Forest Management, University of Montana, 1979

Experience

Over twenty years of Forest Service experience as a project manager or interdisciplinary team leader for NEPA projects on the Tongass National Forest, including four years as the Forest Planner and two years developing land and resource management plans.

Four years of experience as Social Forester as Peace Corps volunteer in Philippines in community development.

Sheila Spores, Forest Silviculturist – Forest Service

Education

M.E.M. and B.S., Forest Resource Management and Ecosystem Management, University of Montana, 1996

B.A., Geography, University of Mary Washington, 1990

Experience

Twenty-three years of Forest Service experience in silviculture and forest management in Region 10, Tongass National Forest.

Melissa Dinsmore, Special Uses Program Manager and Energy Coordinator – Forest Service

Education

B.S.F., Forestry, Purdue University, 1990

Experience

Twenty-two years of experience with the Forest Service in lands and special uses management, energy project coordination, business, and pre-sale forestry in Region 10, Tongass National Forest

Cathy Tighe, Inventory and Monitoring Program Manager – Forest Service

Education

B.S., Biology, University of Oregon, 1994

A.A., Umpqua Community College, 1992

Experience

Twenty-two years of Forest Service experience including recreation and wilderness program management, interdisciplinary team contributor for wildlife, recreation and wilderness, and timber/silviculture, and support services in Region 10, Tongass National Forest

Randal Fairbanks, Interdisciplinary Team Leader, Project Manager, Timber Lead – Tetra Tech

Education

M.S., Forest Science/Biostatistics, University of Washington, 1979

B.S., Wildlife Science, University of Washington, 1972

Experience

Over forty years of experience in design, conduct, and management of ecological and forest inventory and research, impact assessments, and mitigation plans.

Project manager or interdisciplinary team leader for 14 major forest management-related EIS/EA efforts.

Major contributor to dozens of other EISs, EAs, and Environmental Reports.

David Cox, Deputy Project Manager; Forest Plan and NEPA Specialist – Tetra Tech

Education

B.S., Environmental and Engineering Geology, Western Washington University, 2000

Experience

Fifteen years of experience in conducting and leading hydrologic, soil, geomorphic and aquatic resource surveys.

Thirteen years of experience in preparing and managing NEPA projects on federal lands, including six EISs on the Tongass.

Matt Dadswell, Senior Social Scientist/Economist – Tetra Tech

Education

Ph.D., Candidate, Geography, University of Washington

M.A., Geography, University of Cincinnati, 1990

B.A., Economics and Geography, Portsmouth Polytechnic, 1988

Experience

Fifteen years of experience conducting economic, social, and environmental regulatory analysis on a variety of natural resource projects, including Forest Service and NEPA projects.

Ten years of experience working on Forest Service projects, including projects on the Tongass National Forest.

John Knutzen, Senior Fisheries Biologist/Aquatic Ecologist – Tetra Tech

Education

M.S., Fisheries, University of Washington, 1977

B.A., Biology, Western Washington State College, 1972

Experience

Thirty-eight years of experience evaluating developmental activity impacts to lakes, rivers, and stream water quality and aquatic resources in the Pacific Northwest, with emphasis on salmonids.

Experience working on more than 80 projects in the Pacific Northwest, including assessing effects of federal actions on endangered fish species.

Provided scientific evaluation on more than 30 NEPA documents, including Forest Service EISs for the Tongass National Forest.

Steve Negri, Wildlife Biologist – Tetra Tech

Education

M.S., Wildlife Ecology, Michigan State University, 1995

B.S., Business Finance, University of Missouri, 1985

Experience

Eighteen years of experience as a wildlife biologist, including work on three EISs for the Tongass National Forest and more than a dozen Forest Service-related projects.

Experience working on approximately 20 EISs and other NEPA documents in the Pacific Northwest and Alaska.

Previous experience includes working 5 years as threatened and endangered species biologist for the Washington Department of Fish and Wildlife.

Brita Woeck, Wildlife Biologist – Tetra Tech

Education

M.S., Wildlife Ecology and Management, University of Missouri, Columbia, 2003

B.S., Wildlife Science, University of Washington, 1999

Experience

Fourteen years of experience in environmental planning and permitting, biological resource analysis, and terrestrial and aquatic ecosystems monitoring.

Expertise in Endangered Species Act (ESA) implementation, including Biological Assessment and Habitat Conservation Plans development; National Environmental Policy Act (NEPA) and state equivalents, including management and/or facilitation of all aspects of the NEPA process; Environmental Impact Statements (EIS) and Environmental Assessments (EA) preparation for natural resource, renewable energy, mining, land management, transmission line, and gas pipeline projects; and wildlife surveys and habitat assessments.

Mary Jo Watson, GIS Analyst – Tetra Tech

Education

B.S., Computer Information Systems, Menlo College

Experience

Twenty-three years of experience as a GIS analyst specializing in creating complex riparian models, surface models, habitat models, perspective scene analysis, aerial photo interpretation of logging units, preparation of field maps, and final production of maps for numerous timber sale EISs.

Experience includes serving as lead GIS analyst on more than a dozen Forest Service projects, including four EIS projects specific to Southeast Alaska and the Tongass National Forest.

Karen Brimacombe, Wetland Scientist /Botanist – Tetra Tech

Education

B.A., Botany, University of Washington, 2000

M.B.A., University of Chicago, 1993

Experience

Over fourteen years of experience in plant ecology, wetland biology, vegetation mapping, rare plant, noxious weed, and general botanical surveys, including work on the Tongass National Forest.

Seven years of experience working on EIS and NEPA documents.

Chris James, Hydrology – Tetra Tech

Education

M.S., Forest Hydrology, University of Washington, 2007

Certified, Watershed Management, Portland State University, 2005

B.A., Environmental Resources (Chemistry minor), Lewis and Clark College, 1999

Experience

Fifteen years of experience performing surface water data collection, analysis, and reporting to evaluated impacts associated with water and fisheries resources.

Ten years of experience working on NEPA documents, including projects on the Tongass.

Rachael Katz, Lands and Social Sciences – Tetra Tech

Education

M.P.A., Environmental Policy and Natural Resource Management, Daniel J. Evans School of Public Policy and Governance – University of Washington, 2011

B.A., Political Science and German Studies, New York University, 2005

Experience

Ten years of experience in public policy and planning. Four years of experience preparing NEPA analyses evaluating social and land resources.

John Crookston, Biologist and Planner– Tetra Tech

Education

B.S., Biology, University of California San Diego, 2002

M.S., Ecology, San Diego State University, 2007

Experience

Twelve years of experience as a biologist and environmental planner, including NEPA and ESA related studies and impact analyses, and computer based population modeling.

Bob Evans, Landscape Architect – Tetra Tech

Education

M.S., Landscape Architecture, 2006

M.S., Community Planning, 2006

B.S., Environmental Design, 2003

Experience

More than nine years of experience in interdisciplinary environmental planning with an extensive focus on visual resource inventory and analysis.

Jeff Phillips, Geomorphologist– Tetra Tech

Education

M.S., Fluvial Geomorphology, University of British Columbia, 2007

B.S., Physical Geography, University of Utah, 2005

Experience

Nine years of experience designing and conducting ecological research and assessments including the impacts of forest practices on soil and aquatic resources.

Josh Rodriguez, Forest Health – Tetra Tech

Education

M.S., Forestry, University of Montana, 2005

B.S., Forest Resources Management, University of Montana, 2001

Experience

Ten years of experience in designing, managing and completing ecological studies including extensive work in forest, range and wetland ecosystems.

T. Weber Greiser, Heritage Resource Specialist/Archaeologist

Education

M.A., Anthropology, University of New Mexico, 1972

B.A., Anthropology, University of New Mexico, 1969

Experience

Thirty-four years of experience as Project Manager and/or Principal Investigator on heritage resource projects in Alaska and throughout the Western U.S. Experience includes prehistoric and historic archaeological predictive modeling; heritage resource surveys, testing projects, and excavations; laboratory analysis of artifacts and faunal remains; and ethnographic investigations and oral interviews of native inhabitants regarding land use, water use, and sacred lands.

Heritage resource Principal Investigator for background research, cultural resource survey, preparation of specialist report, and/or preparation of EA or EIS cultural resource sections for nine projects since 1993 on the Tongass.

Other Contributors

Forest Service

Craig Anderson – Timber Sale Preparation
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Ben Case – Young-growth
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Marla Dillman – Wildlife

4 List of Preparers

Lisa Fluharty –Wilderness, Wild and Scenic Rivers, Recreation Special Uses
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CHAPTER 5
LIST OF DOCUMENT RECIPIENTS

List of Document Recipients and Those Notified

Federal Agencies

Alaska Resources Library & Information Services
Federal Energy Regulatory Commission, Environmental Compliance Branch
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Library of Congress
National Marine Fisheries Service, Alaska Region
National Marine Fisheries Service, Protected Resources Management Division – Alaska Regional Office
National Oceanic and Atmospheric Administration, NWS Office of Strategic Planning and Policy
National Park Service, Glacier Bay National Park
National Park Service, Historic Preservation Planning Program
National Park Service, Wild and Scenic Rivers Program
US Government Publishing Office, Federal Digital System
US Advisory Council on Historic Preservation, Planning and Review
US Army Corps of Engineers, Alaska District Headquarters
US Army Corps of Engineers, Juneau Regulatory Field Office
US Army Corps of Engineers, Sitka Regulatory Field Office
US Army Corps of Engineers, Northwestern Division
US Army Corps of Engineers, Pacific Ocean Division
US Army Corps of Engineers, Regulatory Office
US Army Corps of Engineers, Seattle District
US Department of Commerce, National Technical Information Service
US Coast Guard, Environmental Management CG-443
US Coast Guard, Coast Guard 17th District
US Department of Agriculture, APHIS PPD/EAD
US Department of Agriculture, Forest Service, Alaska Region
US Department of Agriculture, Forest Service, Chugach National Forest
US Department of Agriculture, Forest Service, Director of Ecosystem Planning and Budget
US Department of Agriculture, Forest Service, Division of Forest Management
US Department of Agriculture, Forest Service, Ecosystem Management Coordination Staff
US Department of Agriculture, Forest Service, Forestry Sciences Laboratory
US Department of Agriculture, Forest Service, Forestry Services Library
US Department of Agriculture, Forest Service, Pacific Northwest Research Station
US Department of Agriculture, Forest Service, Office of the Chief
US Department of Agriculture, Forest Service, Region 10, Regional Office Planning
US Department of Agriculture, Forest Service, Southeast Regional Subsistence Advisory Council

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US Department of Agriculture, Forest Service, Tongass National Forest, Juneau Ranger District
US Department of Agriculture, Forest Service, Tongass National Forest, Ketchikan-Misty Fiords Ranger District
US Department of Agriculture, Forest Service, Tongass National Forest, Ketchikan Supervisor's Office
US Department of Agriculture, Forest Service, Tongass National Forest, Petersburg Ranger District
US Department of Agriculture, Forest Service, Tongass National Forest, Petersburg Supervisor's Office
US Department of Agriculture, Forest Service, Tongass National Forest, Sitka Ranger District
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US Department of Agriculture, Natural Resources Conservation Service
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US Department of Agriculture, Rural Development, Rural Utilities Service
US Department of Energy, Office of Environmental Management
US Department of Energy, Office of NEPA Policy and Compliance
US Department of the Interior, Bureau of Land Management, Alaska State Office
US Department of the Interior, Federal Subsistence Management Program
US Department of the Interior, Office of Environmental Policy and Compliance
US Department of the Interior, Office of Intergovernmental and External Affairs
US Department of the Interior, US Geological Survey Alaska Science Center
US Department of Transportation, Federal Aviation Administration, Office of the Regional Administrator
U.S. Department of Transportation, Federal Highway Administration, Alaska Division Administrator
US Department of Transportation, Office of Federal Lands Highway Division, Federal Lands Planning Program
US Environmental Protection Agency, Alaska Operations Office
US Environmental Protection Agency, Geospatial Resources Unit
US Environmental Protection Agency, Office of Federal Activities (Central Data Exchange)
US Environmental Protection Agency, Region 10
US Fish and Wildlife Service, Division of Refuge Planning
US Navy, Energy and Environmental Readiness Division
US Navy, Naval Meteorology and Oceanography Command
US Navy, Office of the Chief of Navy Operations
US Navy, US Naval Air Systems Command
US House Natural Resources Subcommittee on Federal Lands
US Postal Service, Point Baker Alaska Post Office
US Senate, Energy Subcommittee on Public Lands, Forests, and Mining
US Small Business Administration
USGS Alaska Science Center

Federal Advisory Committee

Tongass Advisory Committee

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Jaeleen Araujo
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Robert Mills
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Richard Peterson
Christopher Rose
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Carol Rushmore
Erin Steinkruger
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Kate Troll
Lawerence Widmark
Jeffery Wade Zammit

State and Federal Congressional Representatives

Lisa Murkowski, U.S. Senator
Dan Sullivan, U.S. Senator
Don Young, U.S. Representative
Dennis Egan, Senator (Alaska Legislature, Dist. Q)
Sam Kito, Representative (Alaska Legislature, Dist. 35)
Jonathan Kreiss-Tomkins, Representative (Alaska Legislature, Dist.
Cathy Muñoz, Representative (Alaska Legislature, Dist. 34)
Dan Ortiz, Representative (Alaska Legislature, Dist. 36)
Bert Stedman, Senator (Alaska Legislature, Dist. R)

Alaska Native Tribes and Corporations

Alaska Native Brotherhood Grand Camp
Angoon Community Association
Alaska Native Sisterhood Grand Camp
Cape Fox Corporation
Central Council Tlingit & Haida Indian Tribes of Alaska
Chilkat Indian Village
Chilkoot Indian Association
Craig Tribal Association

Douglas Indian Association
Goldbelt, Incorporated
Haida Corporation
Hoonah Indian Association
Huna Totem Corporation
Hydaburg Cooperative Association
Kake Tribal Corporation
Kavilco Inc.
Ketchikan Indian Community
Klawock Cooperative Association
Klawock Heenya Corporation
Klukwan Inc.
Kootznoowoo Inc.
Metlakatla Indian Community
Organized Village of Kake
Organized Village of Kasaan
Organized Village of Saxman
Petersburg Indian Association
Sealaska Corporation
Shaan-Seet Inc.
Shee Atika Incorporated
Sitka Tribe of Alaska
Skagway Traditional Council
Wrangell Cooperative Association
Yak-Tat Kwaan, Inc.
Yakutat Tlingit Tribe

State Agencies

Alaska Congressional Delegation
Alaska Department of Commerce, Community and Economic Development
Alaska Department of Commerce, Community and Economic Development, Alaska Energy Authority
Alaska Department of Environmental Conservation
Alaska Department of Fish and Game, Boards Support Section
Alaska Department of Fish and Game, Division of Commercial Fisheries
Alaska Department of Fish and Game, Division of Habitat
Alaska Department of Fish and Game, Division of Subsistence
Alaska Department of Fish and Game, Division of Wildlife Conservation
Alaska Department of Fish and Game, Special Areas Planning
Alaska Department of Fish and Game, Division of Sport Fish
Alaska Department of Fish and Game, Division of Wildlife Conservation
Alaska Department of Health and Social Services
Alaska Department of Health and Social Services, Senior and Disabilities Services
Alaska Department of Labor and Workforce and Development
Alaska Department of Law
Alaska Department of Military and Veteran Affairs

Alaska Department of Natural Resources, Alaska Mental Health Trust Land Office
Alaska Department of Natural Resources, Citizens' Advisory Commission on Federal Areas
Alaska Department of Natural Resources, Office of Project Management and Permitting
Alaska Department of Natural Resources, Office of Project Management and Permitting, ANILCA
Alaska Department of Natural Resources, Historic Preservation Office
Alaska Department of Natural Resources, Division of Forestry
Alaska Department of Natural Resources, Division of Mining, Land and Water
Alaska Department of Natural Resources, Office of Project Management and Permitting
Alaska Department of Natural Resources, Public Information Center (Juneau)
Alaska Department of Public Safety
Alaska Department of Revenue
Alaska Department of Transportation and Public Facilities
Alaska Office of the Governor
Alaska Office of the Lieutenant Governor
Alaska State Legislature
University of Alaska

City and Borough Agencies, Libraries, and Schools

Alaska Court System, Juneau Law Library
Alaska Court System, Ketchikan Law Library
Alaska State Library
Angoon Public School Library
Bruce Hill School
City and Borough of Juneau
City and Borough of Sitka
City and Borough of Wrangell
City and Borough of Yakutat
City of Angoon
City of Coffman Cove
City of Craig
City of Edna Bay
City of Hoonah
City of Hydaburg
City of Kake
City of Kasaan
City of Ketchikan
City of Klawock
City of Kupreanof
City of Pelican
City of Point Baker
City of Port Alexander
City of Saxman
City of Tenakee Springs
City of Thorne Bay
Community of Naukati West

5 List of Document Recipients and Those Notified

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Greater Ketchikan Chamber of Commerce
Haines Public Library
Hollis Public Library
Hoonah Public Library
Howard Valentine School
Hydaburg School Library
Hyder Public Library
Ivy Tech Community College
Juneau Chamber of Commerce
Juneau City Clerk
Juneau Public Library
Kake Community Library
Kasaan Community Library
Ketchikan Chamber of Commerce
Ketchikan Gateway Borough
Ketchikan High School Library
Ketchikan Public Library
Ketchikan Visitors Bureau
Kettleson Memorial Library
Klawock Public Library
Legislative Reference Library
Mendenhall Valley Public Library
Metlakatla Centennial Library
Milwaukee Public Museum
Montana State University, Department of Biology
Municipality of Skagway
Northwestern University, Urban Affairs and Policy Research
Pelican Public Library
Petersburg Borough
Petersburg Borough Police Department
Petersburg Borough Chamber of Commerce
Petersburg Public Library
Point Baker Public Library
Port Commission Wrangell
Port Protection School
Port Protection Community Association
Prince of Wales Island Chamber of Commerce
Prince of Wales Community Advisory Council
Skagway City Council

Skagway Public Library
Tenakee Springs Public Library
Thorne Bay Community Library
Transylvania Cooperative Extension Service
University of Alaska - Southeast, Coop Extension Service
University of Alaska - Southeast, Ketchikan College Library
University of Alaska - Southeast, William A. Egan Library
University of Alaska at Fairbanks
University of Alaska at Fairbanks, School of Natural Resources and Agricultural Sciences, Palmer Research Center
University of Alaska Land Management
University of Minnesota, Forestry Library
USDA National Agriculture Library
Whale Pass School
Wrangell Chamber of Commerce
Wrangell Public Library
Yakutat School District Library

Other Organizations

AJ Mine/Gastineau Mill Enterprises
Alaska Independent Power Producers Association
Alaska Audubon
Alaska Chapter of the Wildlife Society
Alaska Conservation Foundation
Alaska Dispatch News
Alaska Electric Light and Power Company
Alaska Forest Association
Alaska Miners Association
Alaska Power & Telephone Co. (AP&T)
Alaska Power and Telephone Skagway
Alaska Resource Development Council (RDC)
Alaska Wilderness League
All Aboard Yacht Charters & Southeast Alaska Wilderness Tours Association
Baranof Wilderness Lodge/Beyond Boundaries Expeditions
Big Brothers Big Sisters of Alaska
Boy Scouts of America, Great Alaska Council
Blue Starr Oyster Co.
California Forestry Association
Cascadia Wildlands
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Notifications of the availability of the Draft Environmental Impact Statement were also sent to 1,213 individuals.

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CHAPTER 6

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CHAPTER 7
GLOSSARY

Glossary

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CHAPTER 8
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